THE OIL WEEKLY

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The Oil Man's Calendar

MAR.	
12	American Petroleum Institute, Pacific Coast District, Division of Production, Los Angeles.
14–15	American Petroleum Institute, Mid-Continent District, Division of Production, Wichita, Kansas.
28–29	American Petroleum Institute, Southwestern District, Division of Production, Houston, Texas.
31	Western Petroleum Refiners Association, Wichita, Kansas.
APR.	
9–11	Society of Exploration Geophysicists, Chicago.
10–12	American Association of Petroleum Geologists, Chicago.
11	Society of Economic Paleontologists and Mineralogists, Chicago.
11–12	American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.
16–18	Southwestern Gas Measurement Short Course, Norman, Okla.
18–19	National Petroleum Association, Cleveland, Ohio.
26–27	Petroleum & Natural Gas Conference, State College, Pa.
MAY	
1– 3	Petroleum Industry Electrical Association, Dallas, Texas.
6–10	American Gas Association, Natural Gas Section, Houston.
15–17	Natural Gasoline Association of America, Tulsa.
18–25	International Petroleum Exposition & Congress, Tulsa.
27–31	American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Tex.
30–31	National Oil Scouts and Land Man's Association, Hot Springs, Ark.
June 1	
JUNE	
1	Illinois-Indiana Petroleum Association, Robinson, Ill.

Contents « February 26, 1940

Volume 96, Number 12

This Week's Panorama..... 11

Feature Section:

Lack of Coordination Causes Excess Gasoline Supply... 12
By W. B. CASE

Stability Is Foundation for Promising Outlook in Kansas 13
By FRANK B. TAYLOR

Kansas Pool Map..... 16

Paraffin Problems in East Texas Field..... 23
By W. N. LITTLE

Salem Chief Factor in Illinois Production Increase..... 40
By JERRY THORP

Gasoline Demand This Year Below Expectations..... 47
By L. J. LOGAN

Industry Representatives Denounce Federal Control.... 55

News Section and Index..... 67

Looking Ahead With the Editor..... 4

Notes for the Equipment Buyer and User..... 98

Squeaks from the Bull Wheel.....104

Advertisers' Index.....106

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THE OIL WEEKLY

FEBRUARY 26, 1940

VOLUME 96 NUMBER 12

The Week's Panorama

GENERAL business activity has continued at slightly reduced levels, following the reaching of new highs in the latter part of 1939.

Indices of business activity have shown some additional decline in February, after having sagged in January.

Industrial Output . . . . . .

Industrial production failed to show the usual seasonal expansion in January, and the Federal Reserve Board's seasonally adjusted index of output declined to 120 percent of the 1923-1925 average, from 128 percent in December.

However, the December figure was the highest ever recorded, and the January activity, although reflecting a slowing down, was at the highest level for any January in history.

Actually, production declined only a little in January, the drop in the adjusted index having been due primarily to the failure to show the usual seasonal gain over December.

The Federal Reserve Board's unadjusted index of production, based on average daily output, was estimated at 118 for January, compared with 120 for December, and 124 for November and October.

Activity was slightly larger in January, 1940, than in January, 1929. It was 5 percent larger than in January, 1937, and 18 percent greater than in January, 1939.

Automobile Sales . . . . . .

Encouraging to the oil industry is the fact that activity has been especially well maintained in automobile production and sales.

Domestic retail sales of new cars and trucks in January, 1940, were the greatest for any January on record except the initial month of 1937.

Having been made in the face of exceptionally adverse weather, that record has foreshadowed good sales also in February.

Oil for Fighting . . . . . .

Although the wars in Europe so far have retarded exports of oils from the United States, they ultimately may stimulate foreign shipments. For extended fighting necessarily would require oil, and petroleum is likely to be a crucial commodity in the present wars, as in the World War.

Recent military movements in the Near East have been interesting from the viewpoint of oil exporters, as fighting in that region might interfere with shipments of Iran and Iraq oils to the Allies, who probably would have to turn, in such event, to South America and the United States for larger proportions of their requirements.

Diesel Trains . . . . . .

Diesel-powered stream-lined passenger trains promise to add materially to the consumption of Diesel oil, a product closely comparable with kerosene and light fuel oil. These trains have proved popular, and have brought their operators exceptionally good returns.

Pennsylvania Crude . . . . . .

The oil situation in the Appalachian region continues conducive to strong markets. Total inventories of crude oil have been further reduced since the beginning of this year, although stocks at refineries lately have been built up somewhat, at the expense of pipe line and tank farm storage. On February 1 the stocks of Pennsylvania crude oil totaled 4,185,258 barrels, or 22.6 percent less than the 5,410,725 barrels held a year previously. The stocks at refineries were down 47.7 percent, from 900,059 barrels on February 1, 1939, to 470,276 barrels February 1, 1940; and pipe line and tank farm stocks were down 17.7 percent, from 4,510,666 to 3,714,982 barrels.

California Prices . . . . . .

Some hope has been offered to California producers that former crude prices may be restored, as several major companies have restored Bunker oil prices at San Pedro to 90 cents a barrel, from the lately prevailing 75-cent level.

However, contracts covering substantial shipments in 1940 already have been closed at the 75-cent price, and such contracts may stand in the way of a return to the old basis in buying crude.

Meanwhile, independent producers assert that their curtailment efforts merit a restoration of the former crude postings.

Earnings Better . . . . . .

Earnings of oil companies so far in 1940 have been better than in 1939, it is indicated. For average prices of refined products have been somewhat better, while volumes of business have been moderately larger.

Crude prices are mostly unchanged from a year ago, but production has been larger, and earnings of solely producing companies have been augmented to the extent of the gains in well output.

There are, of course, exceptions to the above statements. California companies have been handicapped this year by weak fuel oil markets and since February 1 by lower crude prices. But on the other hand, the industry of the Appalachian region is doing better than a year ago, because of better prices for lubricants and crude oil.

Lack of Coordination Causes Excess Gasoline Supply

By W. B. CASE

ONE of the most distressing and critical conditions in the oil industry today is the unbalance which exists as between the demand for distillate fuel oil and the required supply of gasoline. The subject is rather involved and I shall not attempt to go into all of its ramifications at this time.

For the past four winters the amount of crude oil run to stills in the fourth quarter of the year has been considerably greater than is required to meet the demand for gasoline and the normal seasonal increase in stocks. In two of the last four years, runs in the fourth quarter have been greater than in any other quarter of the year. This running of crude in the fourth quarter to meet the distillate fuel oil demand has resulted in building up gasoline inventories to excessive levels at the beginning of the following gasoline consuming season and in the minds of many in the industry does not constitute "demand."

Over the calendar year 1939 refiners dipped into their distillate fuel oil inventories for about 2.7 million barrels of their required supply. The total demand for distillate fuel oils—domestic and export—east of California in 1939 amounted to about 134.5 million barrels. Had this amount been met out of new production and had there been no change in the yields of gasoline and distillate fuels, there would have been produced an additional 10 million barrels of gasoline as for every barrel of distillate fuel oil made in 1939 there were 3.7 barrels of gasoline.

In analyzing this condition, it is difficult to separate the causes and effects, but in general the conditions are as these:

1. The demand for distillate fuel oil is growing at a much larger yearly percentage increase than is the demand for gasoline. Over the past five years the consumption of distillate fuel oil used for heating has increased at an average rate of 13.7 percent per annum. The total domestic consumption of distillate fuel oil East of California has increased at a rate of 11.3 percent per annum. Exports, East of California, have increased at an average rate of 29.1 percent per annum. The total demand for distillate fuel oil East of California has increased at an average rate of 13.3 percent. The average annual increase in the total demand for gasoline from crude oil (excluding all natural) has been 7.1 percent per annum.

2. The percentage yield of distillate fuel oil is not keeping pace with the demand for that product and over the year 1939 lagged so far behind that had refiners not been able to go into distillate fuel stocks for their supplies, there would have been produced at the yields actually realized in that year an additional 10 million barrels of gasoline over and above the 8.6 million barrels which were added to storage. As just mentioned the average annual increase in the total demand for distillate fuel oil East of California has been 13.3 percent. The average increase in the yield of distillate fuel oil from crude has been 6.6 percent per annum.

3. By the end of the winter, refiners will have reduced their distillate fuel stocks to what may be considered the very lowest economic level for convenient operation. They cannot fill out another year's requirements from stocks.

4. As a result of this unbalanced condition and particularly of maintaining crude runs at excessive rates during the fourth quarter, gasoline inventories have mounted higher and higher and are likely to reach 83 million barrels East of California on March 31, 1940, if there is enough tankage to hold that amount of gasoline.

5. Unless balance is restored the condition will get worse year by year.

The causes of this present state of unbalance appear to be:

1. The failure of the companies to properly coordinate their gasoline sales with their distillate fuel oil sales.

2. The failure of the refiners or the physical inability of their equipment to permit taking from the crude oil an increasingly larger percentage of distillate fuel oil.

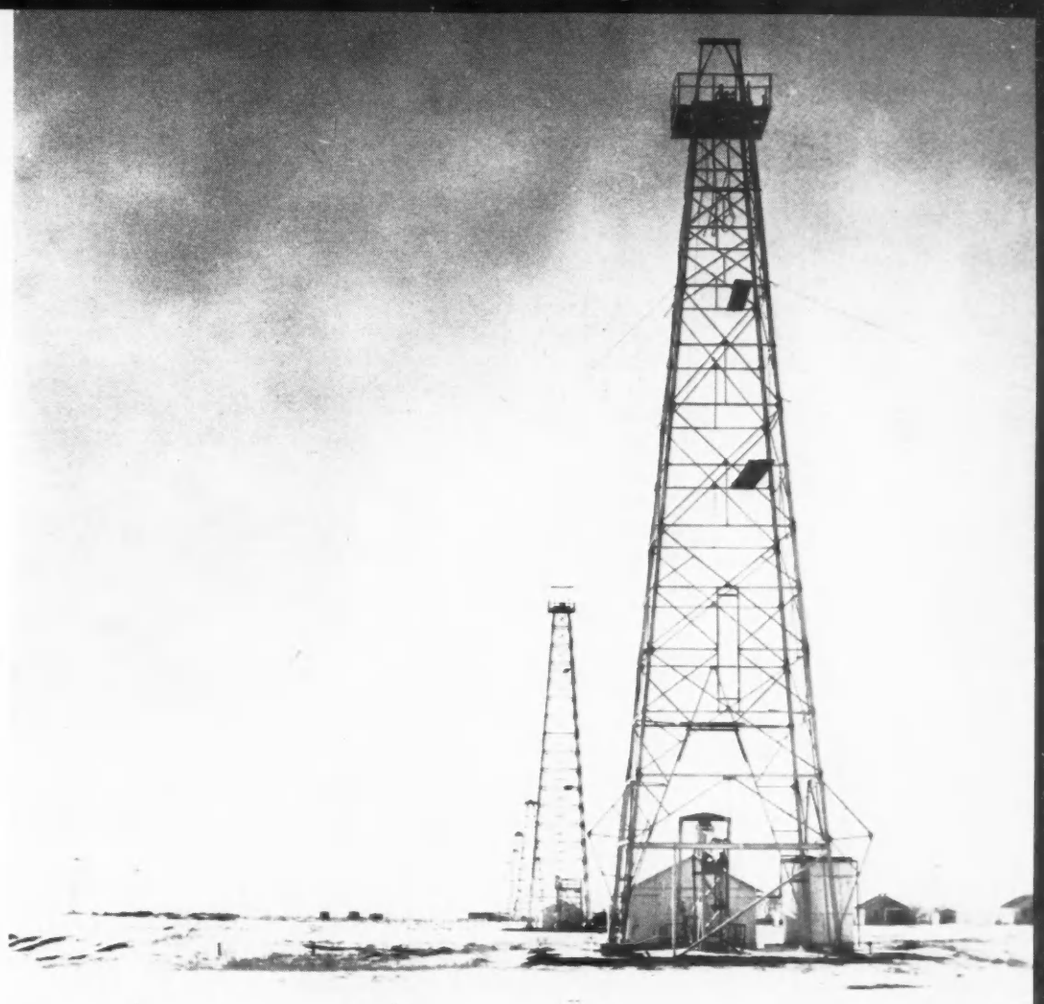
3. The obstructions which the industry has placed on the law of supply and demand.

[*Continued on page 51*]

Blank & Stoller

W. B. CASE
Shell Union Oil Corporation, New York

The accompanying discussion was presented at the Economics Section of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers at New York, February 15, 1940. Presentation was during discussion following a paper titled "The Character and Functions of the Monthly Forecasts of Demand Prepared by the Bureau of Mines," by Alfred G. White. (See The Oil Weekly, February 19, 1940, page 40.)



Rigs dot regular ten-acre locations in Chase pool to form a line to the horizon.

Stability Is Foundation for Promising Outlook in Kansas

By FRANK B. TAYLOR, Staff Writer

DEVELOPMENT has taken an upswing in Kansas with 1940 promising to be the best of recent years. Feeling of confidence is statewide, this despite the fact that severe weather of the opening weeks of the year depressed field work below normal. Programs of development are varied, but include a good share of basic field drilling. This is apparent in these first two months of the year.

There are a number of factors which have directly contributed to establishing the present trend in Kansas. Examination of these clearly indicates the new situation in the state is not merely a first-of-the-year spurt, nor a momentary increase in activity, but instead indicates a healthy and stable condition. Acting as the foundation for this new order, this stability is the driving force.

There are six primary causes for the firm position Kansas development has assumed. Of them, the most important is the increased demand for the state's production. This increase has not been so great as to attract wide attention, but it is there, and has been a steady influence during the past 5 months. This demand increase is shown in the increased production of the first 6 weeks of 1940 as compared with the daily average production of 1939 which it exceeds by 5500 barrels per day. Comparing present production with the same period last year, the increase is more evident, and stands at 24,500 barrels gain per day. This ratio is shown in the accompanying graph.

The increased demand, however tardy in exerting its influence, brought about added connections where line capacity remained be-

low maximum and resulted in minor extensions to gathering systems. The only major pipe-line work undertaken is the 10-inch artery now under construction by Stanolind Pipe Line Company to provide outlet for Ellis County and the northwest section of Central Kansas Uplift development. This line will give relief to a congested transportation area in the immediate vicinity and effect a general readjustment throughout the section.

Opinion in the field pictures this line as exerting a considerable influence on the whole Western Kansas scene. However, close observers of the production and transportation problems of the state do not believe the line's influence will be so marked. In all, as it will be originally completed, the line's daily capacity will be 10,000 barrels, and not all of this should be classified as being earmarked for previously unmarketable production. But the big factor is that an increased demand is present and that this has resulted in an increased pipe-line capacity.

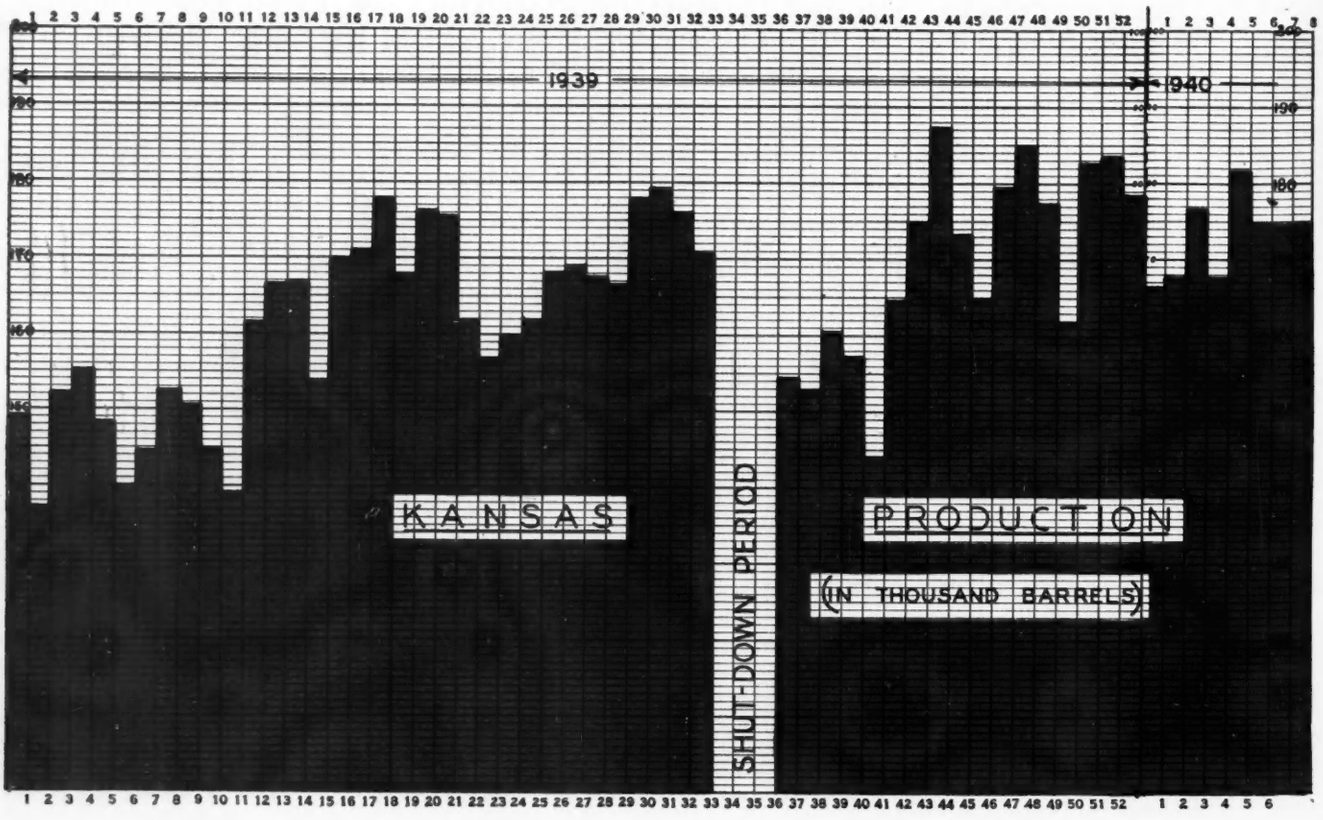
Also encouraging is the fact that a market increase of any degree has asserted itself in the face of constantly increasing production in Illinois.

Not so involved or difficult of analysis as the Kansas market situation and its relationship to the industry as a whole, is the elimination of special allowables. Entirely disregarding the possible merits or demerits of special allowables, the fact that they have been discontinued adds to the soundness of the Kansas system of statewide proration in the opinion of a majority of operators. At this time the only crude being produced under special allowables is protected by granted injunctions.

Kansas offers the only major flush production possibilities in the northern half of the Mid-Continent. Aside from Cement pool, southwest Oklahoma, there is little production that might be classified as either major or flush, and where flush production is being drilled there is no indication of a major producing area being developed. New production throughout the sector, with the exception of Kansas, is from structures of minor nature. This gives Kansas the nod for readily available flush production.

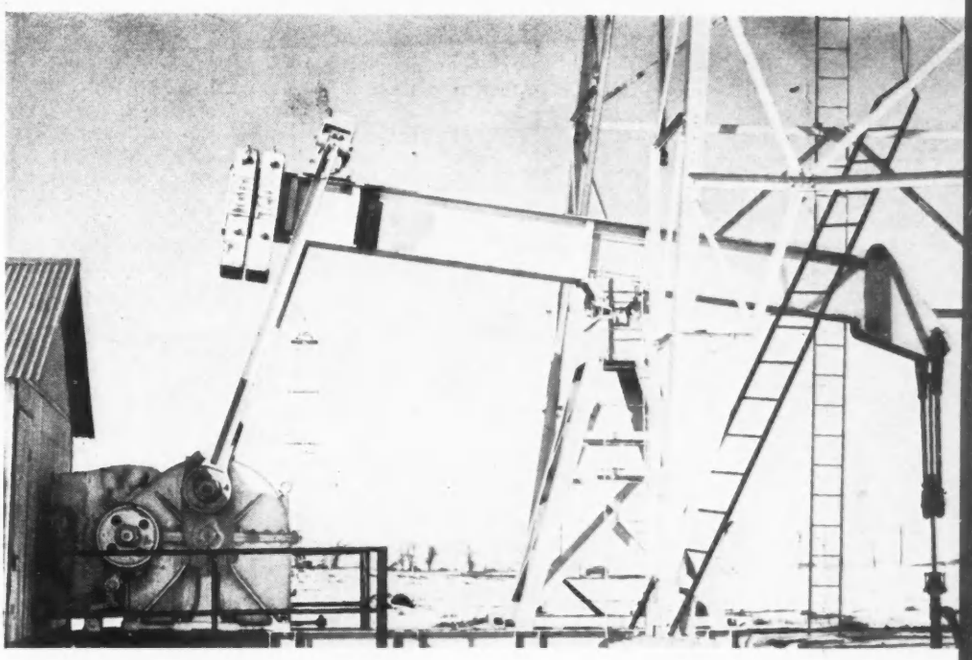
A fourth factor has to do with new production from the lime areas. In many sections of the country, lime production is discounted, probably as an outgrowth of the days when acid treatment had not been developed and shows in lime could not be made commercial. Regardless of this, the feeling persists that sand production is to be chosen every time in preference to lime. However, some sections of Western Kansas offer high per-acre recovery figures to make very attractive the search and development of the more prolific pools. A case in point is Bemis, Ellis County, where Arbuckle lime has produced in excess of 15,000 barrels per acre with the ultimate not yet in sight. In addition to Arbuckle lime, other pays in the same field are productive. Such production, and Bemis is not a singular case, justifies detailed exploration of productive trends.

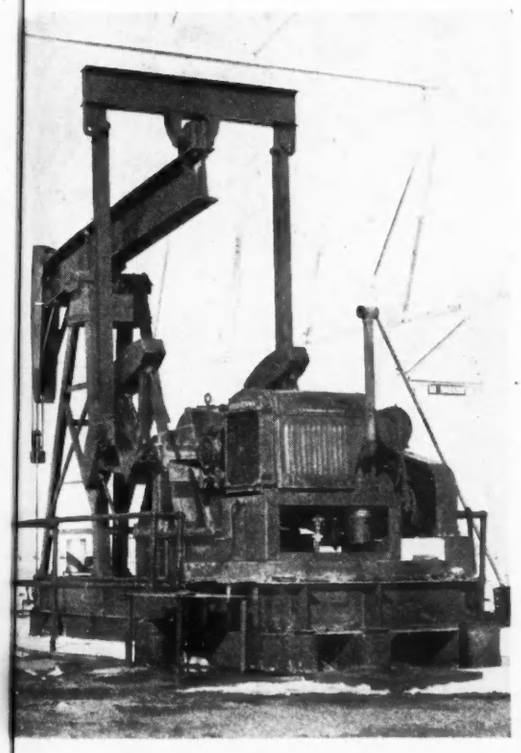
A fifth factor contributing to the stability of Kansas development is expressed in the bettered situation of pools not connected to pipeline systems. In July of 1939, 6 pools had no outlet whatever; today only 2 pools have no means of disposing of production. On the other hand, the total number of fields not connected to systems (see table) has increased from 24 last year to 51, more than doubling. Of this number 7 leases are in pools in which part of the production is cared for by pipe line while the balance is marketed by other means. In order not to be misleading the number of pools without any pipe line total 44. Such listings as Chase denote a portion



of the production is not connected.

Of the 51 pools listed, 7 market their production by trucking to loading rack for railroad shipment. Twenty-one pools truck to pipe line stations for assignment. The majority of the remainder truck directly to refineries of the area, with the Falcon refinery at Great Bend accounting for all or part of the production from 15 fields. Five other refineries take from scattered fields to provide additional market. The most recent of these is the new Cooperative Refinery Association plant at Phillipsburg, Phillips County, with a maximum present daily capacity of 3000 barrels. The plant is now handling 2400 barrels daily, this coming from Burnett,





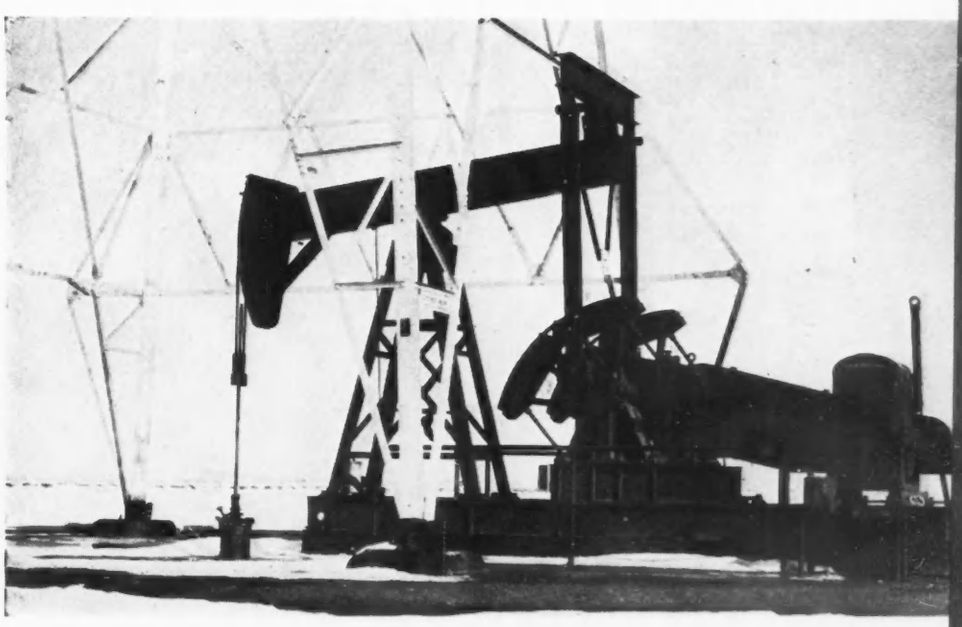
Laton, Westhusin, Faubion and Bow Creek pools. The disturbing element in marketing production as is done by these 51 pools is in the fact that transportation costs are in many instances excessive, and a considerable share of the crude is sold under the market. Trucking costs vary from 7 or 8 cents to as high as 45 cents. The average is about 19 cents per barrel. The necessity of marketing his crude in this manner seriously handicaps the producer by depressing his profit.

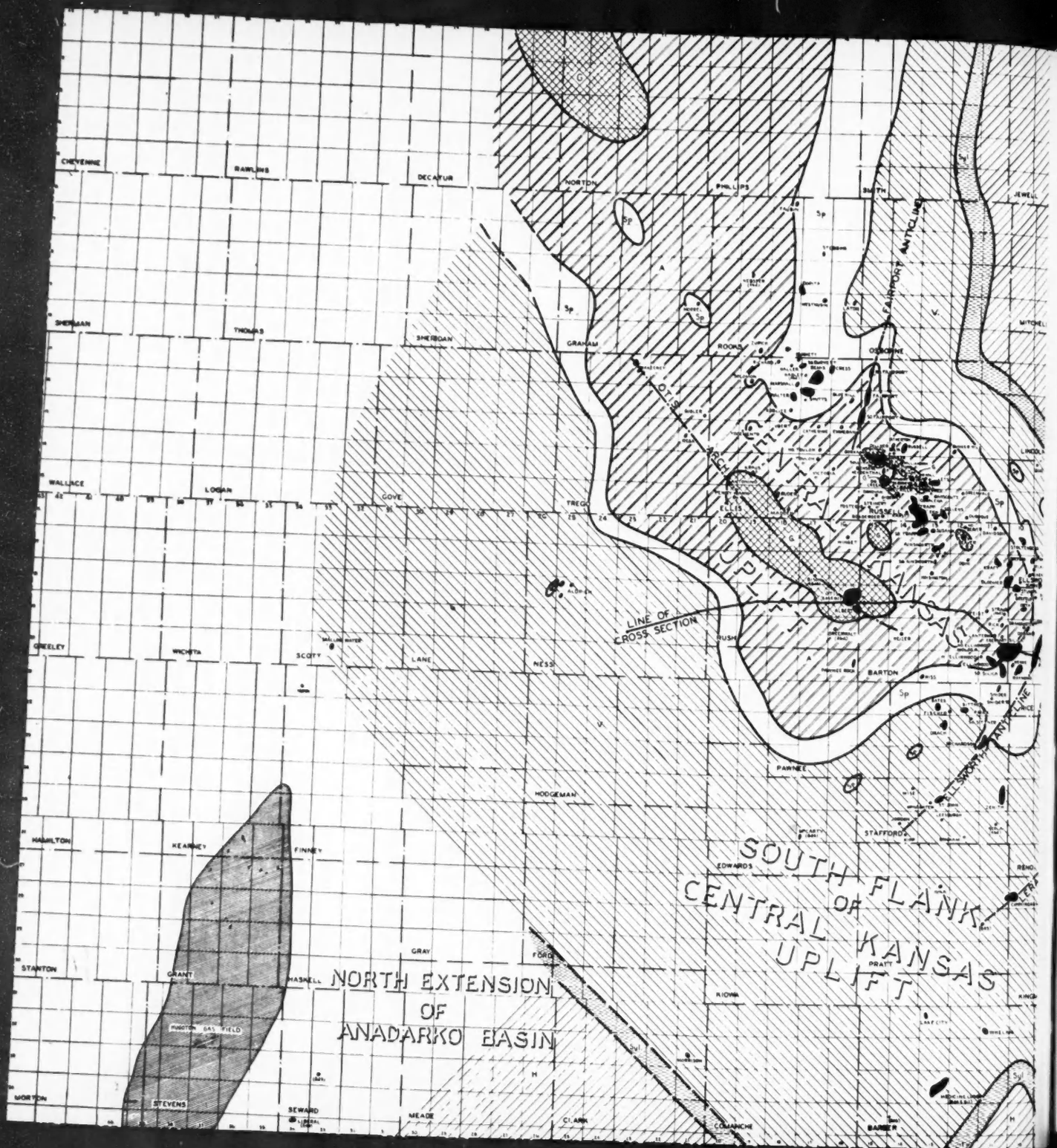
The last but by no means the least important of the factors contributing to the present status of Kansas' development is the recurrent one of spacing. A group of forward-looking Kansas operators some years ago voiced the suggestion that in areas of low ultimate recovery, the operator be given permission to drill on a spacing program greater than the customary 10 acres. It was pointed out that where ultimate recoveries are less than 4500 barrels per acre, there can be no profit on the invested $40,000 necessary to drill and complete a well. On such leases 20-acre spacing will return a fair profit, and will also spread drilling over marginal acreage.

Large water volumes tax pumping equipment in some areas. Heavy duty machinery capable of long-time, low maintenance operation is economically necessary. Other sectors may be produced with light equipment, depending upon depth, water volumes, allowables and depletion rate.

During recent months 20-acre spacing has become a fact upon agreement of operators and at the discretion of the Conservation Department. It is reflected in the daily well allowable indirectly; each acre in excess of the 10-acre unit is taken to increase the well's productivity by 10 percent, thus resulting in a proportionate increase in daily allowable. The 10-percent-per-acre relationship automatically limits the allowable increase to 100 percent of a 10-acre unit allowable regardless of the fact that a well might be on a block exceeding 20 acres area. Maximum allowable, then, is never more than twice the allowable granted a 10-acre unit well.

The minimum allowable in Kan-





KANSAS POOL MAP

Map by Kansas Blue Print Company, Wichita, Kansas
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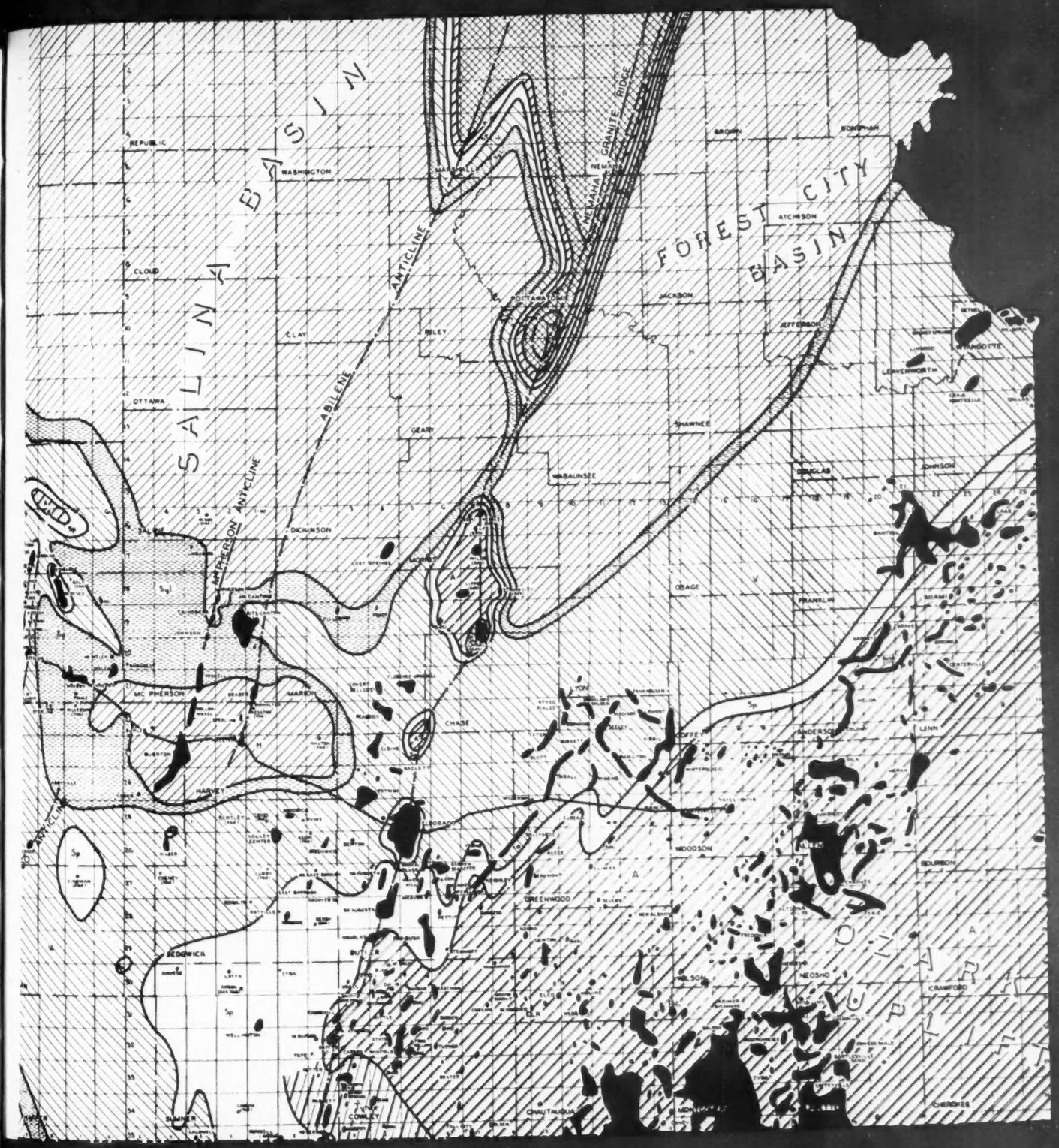


EXPLANATION

THE MAP—If all of the rocks down to and including the Mississippian (Kinderhook) could be stripped away from the State of Kansas, the distribution of the remaining rocks would be visible as shown. This would entail the removal of approximately three thousand feet of sedimentary rocks over most of the state. This distribution is the result of geological uplifts and foldings which have caused structural traps in which the oil and gas in the oil fields of Kansas have accumulated.

sas is 15 barrels, this holding despite acreage consideration. The 15-barrel stipulation is not doubled by the 20-acre consideration to a 30-barrel allowable. However, where a minimum well is located on a unit of more than 10 acres, and where such well's potential results in an adjusted allowable exceeding 15 barrels when the increased acreage is taken into consideration, then the well is allowed the greater production. This might be illustrated by a minimum well on 10 acres with a calculated allowable of 9 barrels. On 20-acre spacing the well would adjust to 18 barrels per day, which it would be allowed. A calculated allowable less than 7½ barrels would not adjust to more than the minimum regardless of acreage considerations so the well would still be allowed the 15-barrel minimum.

This acreage adjustment is widely and variously appraised by operators. Results seem predominately beneficial. The first thought is that application of the principle will materially reduce the number of wells and retard development. Twenty-acre spacing and interpretation will be limited and although there will be fewer wells drilled in some areas which might have been developed at little or no profit on a strict 10-acre unit basis, this will be an economic measure that will release capital for development elsewhere. Also, the 20-acre plan allows the drilling of profitable wells on low ultimate recovery acreage which could not otherwise be developed. In this manner the two major influences of the rule tend to counteract each other, the net result being constructive.

Production and Methods

Only a small share of Kansas production is flowing by natural pressure; something less than 1 percent of the total wells. Those which are in the flowing stage are generally scattered throughout the new fields; last only during early stages of production. In direct contradiction to the usual rule, there are a limited number of fields capable of flowing production. Such are Hittle, Bornholdt, parts of Prusa and Darien. Zenith field is now in the transition stage with a good share of the wells on the pump and the remainder with units set on foundations.

Conventional pumping units are employed throughout Western Kansas, these being usually from 25 to 30 horsepower. Rods are ¾- and ⅞-inch working through 2- and 2½-inch tubing. The quality of the crude determines if it is necessary to treat. In some cases automatically operated chemical feeders are employed at the wellhead, while in others all lease production is heat-treated in a central station prior to discharge into lease storage. Corrosion is a vital problem with particular crudes, its influence being mitigated either through the use of corrosion-resistant materials or through protective agencies.

Within recent months a number of light-weight, portable pumping units have been placed in operation to lift daily allowables. These are only 6 to 10 horsepower, and lift production from the fluid column rather than from the bottom of the hole. Elsewhere in producing areas, a more diversified pumping equipment is apparent than in past years. Submerged electrically-driven units are successful in widely scattered locations, producing high volumes to overcome low oil-water ratios. Electric powers are more widely applied in pumping areas and back-cranking equipment has been found applicable in many sections. Horsepower of routine units is no longer limited to relatively narrow limits, but is spread over a 5- to 45-horsepower range. Today, more than in previous years, requirements of an individual field determine the style and type of lift chosen.

Arbuckle lime remains the chief producing formation for the state with other horizons of major importance the Kansas City-Lansing, Mississippi chat and Topeka lime. Lime formations are treated in the majority of fields, while shooting is a general practice in both sand and lime fields, either with or independently of, acid treatment.

Allowables and Proration

Potential determination has undergone a gradual evolution in Kansas, with the heavy-duty, high-speed pumping units less in evidence today than in the past. This has been brought about by the introduction of other means of arriving at the ability of a well to produce.

Potentials may now be determined either by physical test or by a draw-down method. Pumping equipment is used with non-flowing wells for potential determinations where physical test is desired. Reciprocating pumps are required, making use of not larger than a 3-inch working barrel. Polish-rod stroke must not exceed the 54-inch maximum standardized some years ago. Tubing must not exceed 3 inches with certain exceptions and added detail. Flowing potentials are obtained in similar manner, so that the test is made in the manner in which the individual well is to produce.

Draw-Down Method

In the draw-down method the well is produced at three rates of production, whether flowing or pumping, the production being sustained at the three rates to effect equilibrium of constants. These three points will be determined as fluid levels or as pressure measurements when the bottom-hole gauge is used. For detection of the fluid points, liquid - level - measurement devices are used. From the points stabilized in the operation the productivity curve of the well may be plotted and from this index a potential assigned. For computation of allowable, the maximum potential assignable to a well on the basis of draw-down test, regardless of the indicated ability of the well to produce in excess of this amount, is 3000 barrels.

Allowables above the minimum of 15 barrels per well are adjusted on an established curve with a 15-20-barrel well producing about 78 percent of capacity, a 100-barrel well about 17 percent of capacity, a 1000-barrel well 1.9 percent of capacity and a maximum well (3000 barrels) producing less than 1.1 percent of tested rate. Means for applying these factors to an acreage basis were previously detailed.

Potentials in the state, which were begun in 1933, have steadily risen to a present high of 4,883,303 barrels. By years the state potentials as of December 1 were, in barrels:

1933	288,957
1934	367,038
1935	838,005
1936	1,485,141
1937	3,062,233
1938	3,651,120
1939	4,641,594

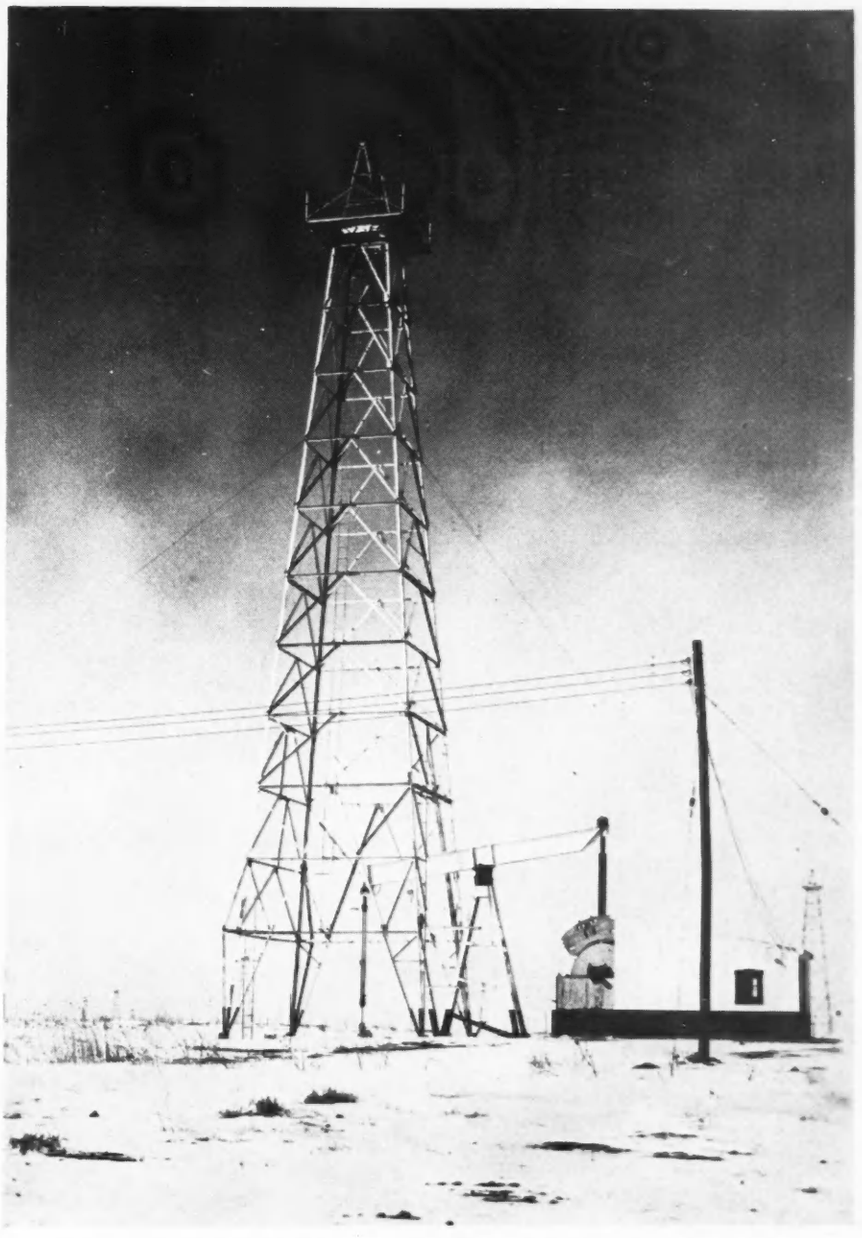
In striking contrast to the rise in the state's potential, the daily well allowable of prorated wells has shown a constant decline. In 1935 the well allowable was established at 60 barrels daily. In 1937 it had declined to 40 barrels, in 1939

dropped again to 24 and now has established a new low of 22½ barrels per prorated well. This is based upon 165,000-barrel daily demand and allowing 40,000 barrels daily for minimum wells, or those making 15 barrels per day or less. The total number of prorated wells in the state equals 5637 as of February, this including 26 minimum wells on the prorated list, while non-prorated wells accounting for 40,000 barrels of crude daily total 14,032.

Despite the fact that 51 pools are without established pipe line connections, the production or allocation picture would be but slightly changed with their connection. Some of the pools listed are but parts of pools having established service, thus constituting leases rather than separate fields. Wells in all but two of the fields are being produced in accordance with allowables granted, production being disposed of by manner or means most agreeable to purchaser and producer. Consequently, connection of the pools would hardly effect allowables elsewhere in the state.

Following are locations of non-connected pools:

County	Pools
Barber	3
Barton	12
Clark	1
Ellis	6
Finney	1
Graham	1
McPherson	1
Ness	1
Norton	1
Pawnee	1
Pratt	1
Rice	5
Rook	3
Rush	2
Russell	2
Stafford	6
Sumner	2
Trego	2
Total	51



Pumper on electric power. Diversified equipment is increasing in application in Kansas.

Drilling—Development—Exploration

Western Kansas is an area of partial development. Only in the older sections has development progressed to the point where fields are delimited. In the newer pools drilling is relatively slow in defining the productive limits of the fields. Undrilled locations, except in developments that are particularly attractive, are many. In a number of areas, the trend of accumulation has been established by wildcatting along a line with tests in alternate sections showing for commercial production. Going on the reasonable assumption, as proven elsewhere in the state, that this scattered production is from a common source, then vast reserves have been partially proven. Calculating on this basis, and still being conservative, it is difficult to assign a total reserve of less than 1,250,000,000 barrels to the state despite the fact that drilling has definitely proven a reserve of only half this total. The consideration does give a means of estimating the drilling probable in the light of indicated productive acres. Wildcatting will inevitably open more fields, more trends, to add to this conclusion.

Recent field activity has brought about the combination of a number of producing areas previously considered separate fields. This has been particularly evident in Rice, Russell, Ellsworth and Ellis Counties. The inter-connection of the lime fields is only proven by steady and slow development.

As in other departments of the industry, Kansas drilling operations have become more diversified recently than in previous years. The advent of the "slim-hole" unit into Kansas was in answer to a wide demand for a per-foot-of-hole cost that would allow development of acreage not commercially attractive with usual development costs. A number of the slim tool units were introduced for routine drilling and were later used for deep exploration with the operator drilling a prospect hole through

the anticipated pay formation. About the same time a number of intermediate size rigs and units were put in operation; while the usual number of cable tool rigs continued in use. In all, the result was a slight decrease in the average per-foot cost of drilling. Four years ago an accepted estimate of drilling the average Kansas well was $32,000; while today it is $26,000. This reduction is due almost entirely to improved equipment and processes. Average depth, although very slightly less, have been a minor factor. Kansas lime production in the western sector is between 3300 feet and 4500 feet, with little cause to explore for deeper production along established trends.

Exploration is still largely confined to the major geologic feature of the state, the Central Kansas Uplift. The Uplift is the control from which much of the edge play is based. The recent activity in Barton County, where a number of producing areas have been opened in the past two years, was undertaken to explore a nosing from the Uplift. Testing within the Dodge City Basin flanking the Uplift to the southwest has not been generally successful. In addition, the pay formations in this area are somewhat deeper than higher on the uplift, and consequently, these exploratory tests are somewhat more expensive.

Tests on the ridge have from four to nine pay formations as goals. These may be in normal relationship or may be encountered in apparent unconformity. Formations found productive were deposited successively in valleys, ravines and synclines formed during different stages of uplift erosion. Consequently, as in the case of Prusa field, deposition occurred in first one or another of the eroded areas during the ages so that the drill may enter almost any of the possible pay formations at comparable depths. Sequence of the formations is constant, although sections might be absent.

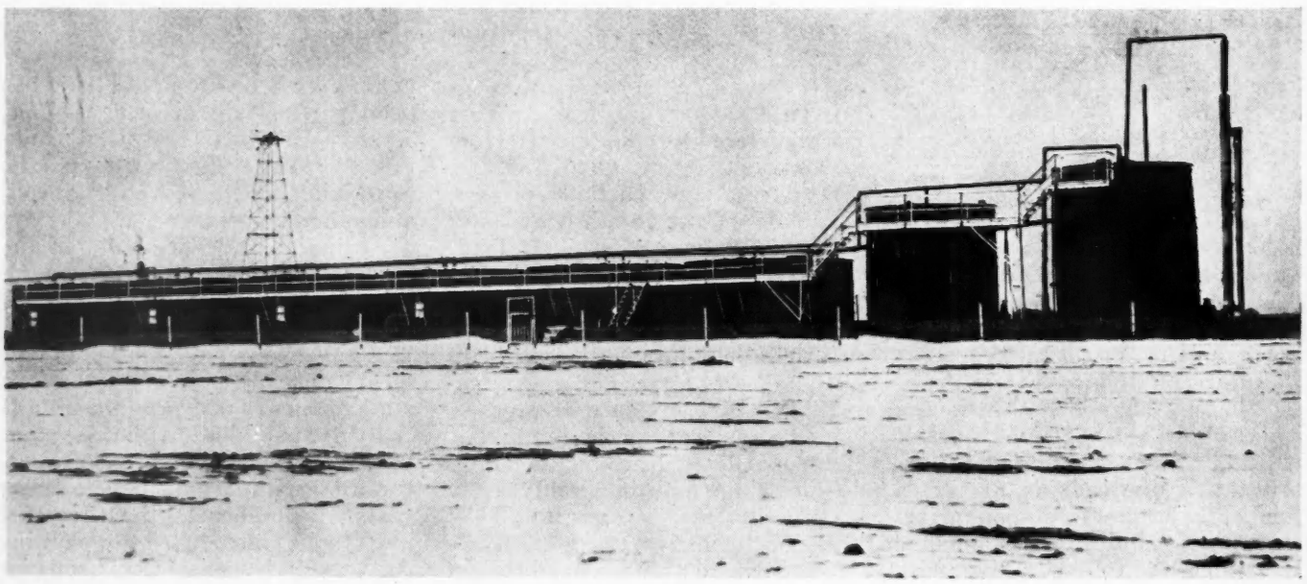
The exploratory trend along the uplift is toward the northwest extreme. Prolific Bemis pool, Ellis County, has been partly responsible for this, although the sector is generally favorable. Success has generally attended this wildcatting with new pools being opened. Along this extension to the uplift development, the following fields are located. Gravity of the production is varied and not exactly comparable with other fields, so is included.

	Gravity
Morel, Graham County	26
Van Patten, Norton County	18
Bow Creek, Phillips County	40
Faubion, Rooks County	39
Stockton, Rooks County	38
Webster, Rooks County	27 & 35
Wakeeney, Trego County	32 & 42

Continued exploration is in prospect for this area. Core drills, seismic, subsurface and surface will each play an important part in the exploration. Further out in the basin, where Cretaceous beds overlie the entire region, it is difficult to correctly interpret surface features for they do not necessarily reflect subsurface conditions. Subsurface control is also at a distinct disadvantage here by reason of the few wells in the basin which can dependably be used for control. Seismic work is being done at this time. Experience in this line is necessary in the specific case of Kansas for gypsum beds and sand bodies make interpretation of recordings more than ordinarily difficult. However, special technique has been evolved which is being successfully used. Core drill is widely applied on the uplift as well as out in the basin area. On the uplift, seismic work is credited with locating eroded areas of the ridge, indicative of accumulative conditions.

Kansas continues to rank first in the nation in ratio of successful wildcats to attempts. During 1939 the state saw 59 oil wells, 10 gas wells and 169 dry holes completed out of 238 wildcat starts. This is an average of 29 percent successful, a ratio that is being continued thus far in 1940 with 5 new fields having been located. The next state by comparison (those drilling less than 100 wildcats not considered) is Oklahoma with 18.4 percent.

Kansas has become a stabilized unity with steady activity and development in prospect. Market is sound, pipe line facilities are not overly sufficient but are adequate, and are being increased at this time. Vast acreage is proven for the drill while the search continues for new trends and productive sectors.



Typical Kansas lease storage with wood or steel equipment. Receiver, treater and filter is often required.

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This table illustrates the importance of selecting the correct alloy, showing the fatigue limits on two steels treated to show the same tensile and hardness.

FATIGUE LIMITS—POUNDS PER SQUARE INCH

Steel and Treatment	On Polished Specimen	Specimen with notch ½" radius, ⅛" deep	Specimen with notch 1/16" radius, 1/16" deep
S. A. E. 1045—normalized and tempered to tensile strength of 85,000 to 90,000	38,000	35,000	31,000
.25% carbon, 2.75% nickel steel—normalized and tempered to same tensile strength	52,000	47,000	41,000

From left to right in the table, the stress concentrations become increasingly severe and, under the worst conditions shown, the alloy steel has a fatigue limit higher than the un-notched and polished carbon steel specimens.

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Since so many factors affect the "fatigue limit" of a part, the selection of the correct alloy steel and the details of its heat treatment is a matter in which the experience of the world's largest producer of alloy steels can help you. Write Republic Steel Corporation, Alloy Steel Division, Massillon, Ohio; General Offices, Cleveland, Ohio.

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Paraffin Problems in the East Texas Field

By W. N. LITTLE
Tide Water Associated Oil Company, Kilgore, Texas

PHYSICAL properties of the crude oil in a reservoir, together with variable quantities of paraffin and asphaltic residues, affect the rate of underground flow, and the amount of oil that will be retained in the sand after all customary methods of recovery have been applied. Gas dissolved in an oil in a reservoir decreases the natural viscosity of the oil and allows it to flow more readily to the well bore where the pressure has been reduced by removal of fluid head. When the pressure decreases sufficiently the gas comes out of solution and aids in moving the oil in the direction of the reduced pressure. The loss of vapor from the oil, the cooling effect of the expanding gas, as well as radiation of heat to the cooler upper formations are major factors causing precipitation of paraffin residue from the oil in the tubing, flow lines and stock tanks.

Precipitation of Wax

The reservoir temperature of the East Texas field at 3300 feet subsea datum is approximately 145° F. At this temperature considerable wax is in true solution in the oil. When the temperature of the crude oil is lowered to 95° to 98° F. while being produced, wax starts to precipitate out of the fluid. According to Lindsley, the crude oil of East Texas has 20.6 percent by volume of gas in solution with a pressure in excess of 750 pounds per square inch. However, in all cases, regardless of method of production, the pressure is lower than 750 pounds per square inch by the time the oil reaches the surface.

The gas in solution plus some of the lighter fractions of the oil liberate themselves, expanding to aid in lifting the oil, cooling the fluid and reducing the solubility of the wax in the crude. Radiation of heat from the fluid to the cooler upper formations, which are aided by water-sand zones with ability to absorb heat rapidly, as well as the above mentioned factors, combine to be important reasons why wax often separates from the oil in the tubing. Pressure is a negligible factor in considering the solubility of wax in an oil.

In many wells the wax precipitated from the oil remains suspended in the fluid and does not cause any deposits in the tubing, however, this wax may settle out in flow lines or stock tanks. Wells operated at a rate sufficient to cause the temperature of the fluid to be above 98° F. when it reaches the surface will not precipitate paraffin in the tubing.

W. N. LITTLE

presents this paper at meeting of the East Texas Chapter of the American Petroleum Institute, Kilgore, Texas, February 20, 1940.

Paraffin Deposits

The substance known as paraffin will vary in character, according to the conditions causing the solidification of the wax in the paraffin, and the length of time it has been deposited. The wax precipitates out of solution in the form of very small crystals, and when deposited, other materials accumulate with it to form what is commonly called paraffin. A sample of East Texas paraffin might contain in percent by weight: 50 percent wax, 30 percent oil, 15 percent gums, a trace of asphaltic material and the rest sand, silt, and water. The paraffin will vary from a light brown color to a blackish brown; its hardness will depend on the length of time it has been deposited.

In the East Texas field, deposits in wells are usually localized at one or more places in the tubing. It is probable that deposition often occurs while the fluid is passing a cooler formation. The considerable number of water sands from the surface to 1200 feet are believed to greatly increase the paraffin problem. Figure 1 shows a typical electrical log of the formation above 1500 feet in the East Texas field.

For a long time, deposits of paraffin in pipes have been associated with the static fluid levels in the wells. In most cases, wells that flow, or have high fluid levels, have thicker paraffin deposits at the fluid levels. When a wax-bearing oil stands opposite a formation sufficiently cool to cause precipitation of wax, it is likely that paraffin will solidify on the cool surface of the pipe. The average reservoir temperature of several wells in the East Texas field at 1600 feet is 100° F.

Assuming that the temperature of the entire East Texas field is 100° F. at this depth, one might expect less paraffin trouble in wells having static fluid levels below this

Quality

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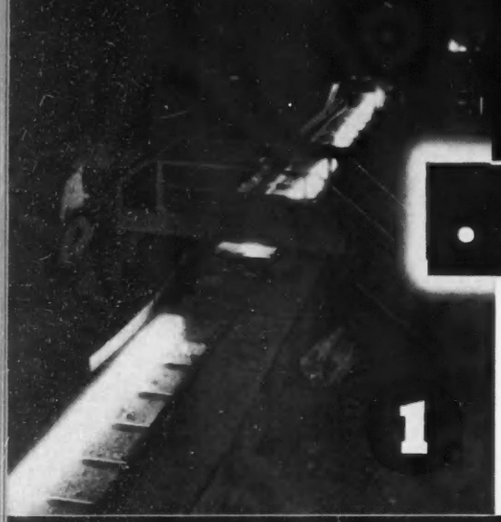

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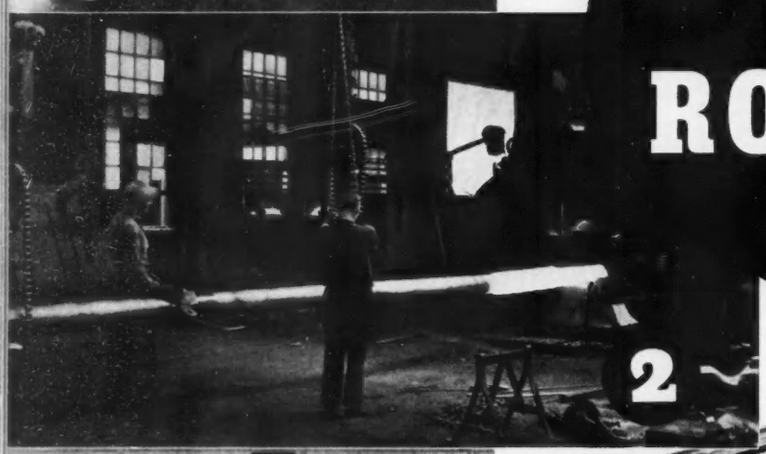

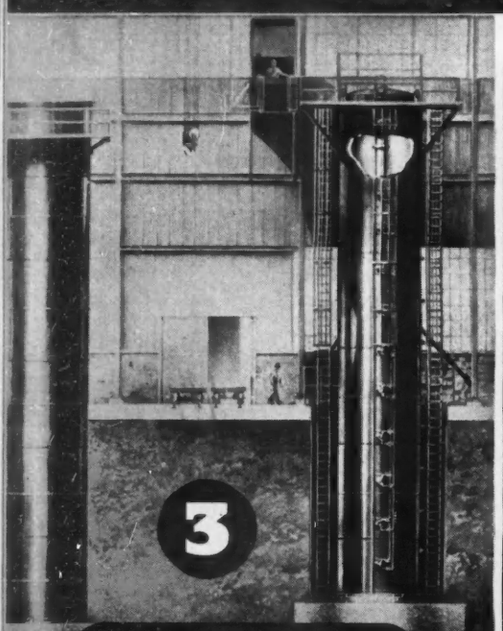

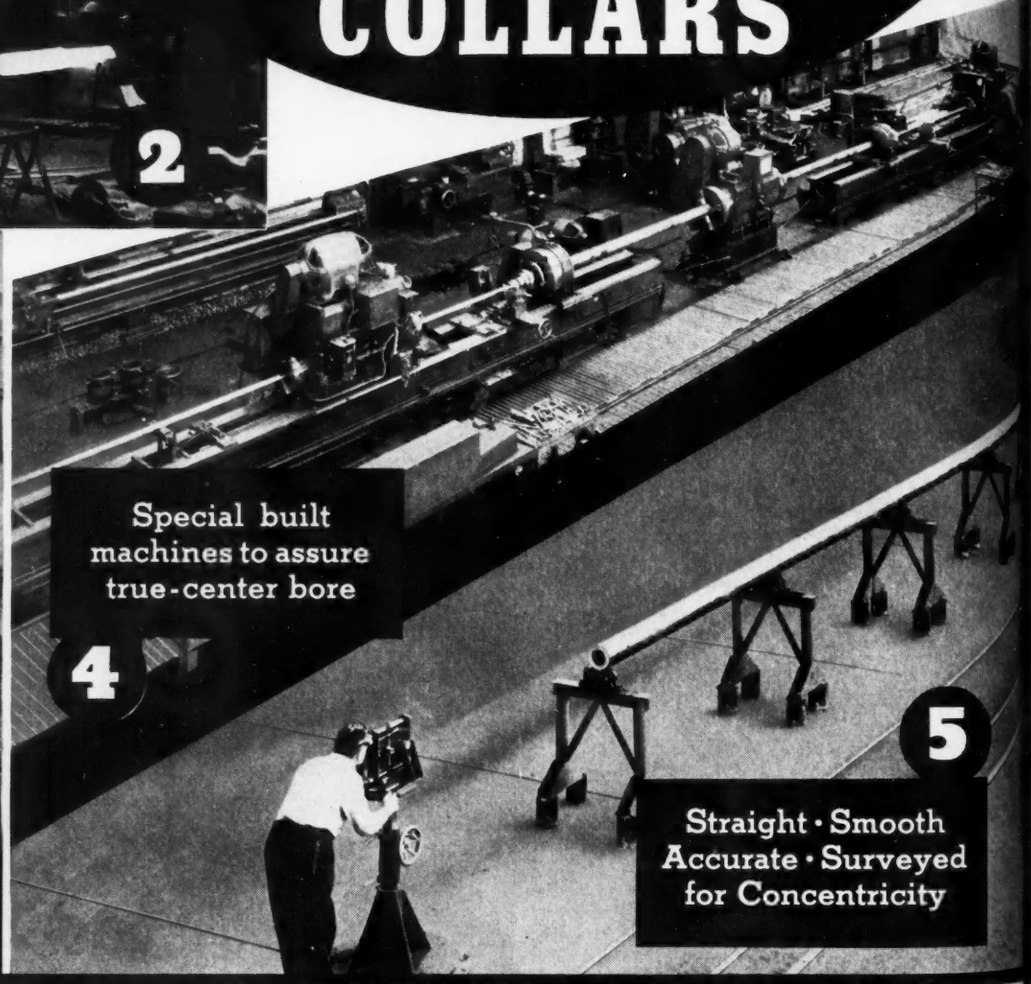

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4. Extreme precautions are taken to insure a true center bore. Special machines are used that bore simultaneously from both ends in opposite directions. Circulation holes drilled in this manner are more uniformly straight, smooth and accurately centered than those obtainable by any other known method.

5. The uniform toughness, hardness and strength plus freedom from material defects make the Ideal Alloy Fully Heat Treated Drill Collars safer, stronger, and longer wearing. In addition, they operate smoothly at the highest rotating speeds, because surveying instruments are used on each collar to guarantee concentricity of the bore.

The collar must also be free from flaws or defects which might cause failure in service. This is assured by the use of the Magnaflux Test, a new method of inspection that utilizes the principle of magnetic attraction to search out all defects no matter how deeply hidden. Ideal Alloy Fully Heat Treated Drill Collars are Magnaflux Tested both after heat treatment and after machining to insure that no defects go undiscovered in the finished collar.

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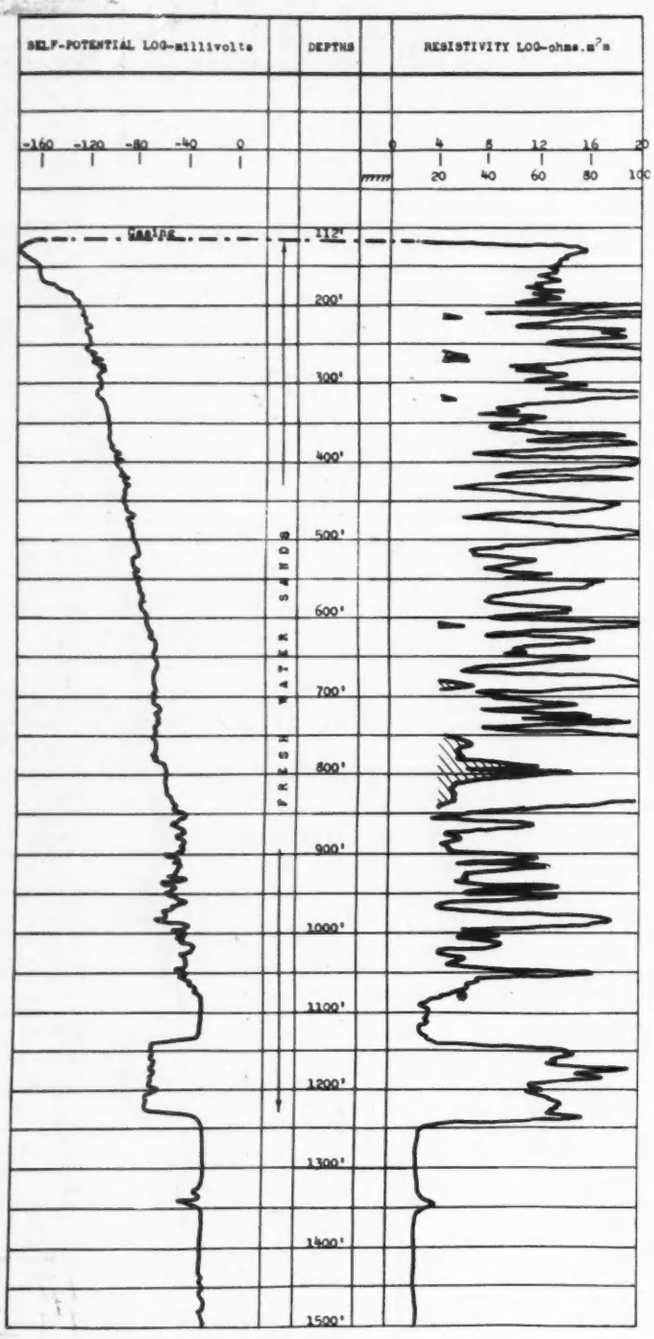


FIGURE 1

point. Many wells that caused paraffin trouble years ago are free of deposits at present because of the decline in fluid levels. The height at which the fluid stands in the wells has lowered due to the decrease in bottom-hole pressure.

The type of wells causing trouble with paraffin deposits are listed as follows:

1. Weak wells—those that produce at a low rate.

2. Wells that are flowed through small surface chokes.

3. Wells that are produced intermittently—these wells leave periodic films of wax-bearing oil on the tubing, the oil drains down the pipe leaving the residue to increase in thickness.

4. Wells that flow or pump in heads. (Same as Number 3.)

5. Pumping wells, the motion of the rods liberates an excess of gas and lighter fractions, decreasing the solubility of the wax in the oil, and cooling the oil.

6. Tapered strings—the gas does more work in these wells, as the size of the string increases, causing excessive heat losses.

Figure 2-A illustrates a typical paraffin deposit in a well on the east side of the East Texas field; the paraffin is usually found at depths ranging from 600 to 1200 feet from the surface.

Figure 2-B illustrates possible paraffin formation in the tubing of a well produced through a small surface choke, such as many near west side wells; this deposit is often found from the surface to 400 feet below the surface.

Figures 2-B and 2-C illustrate the tendency of paraffin deposits to accumulate on the smallest irregularity where the temperature is cool enough to encourage precipitation. Trouble in flow lines is emphasized by numerous and sharp turns, rough pipe and dead ends.

Many references are made in the literature to the use of smaller tubing to transfer a unit part of the fluid to the surface in a shorter time, thus keeping

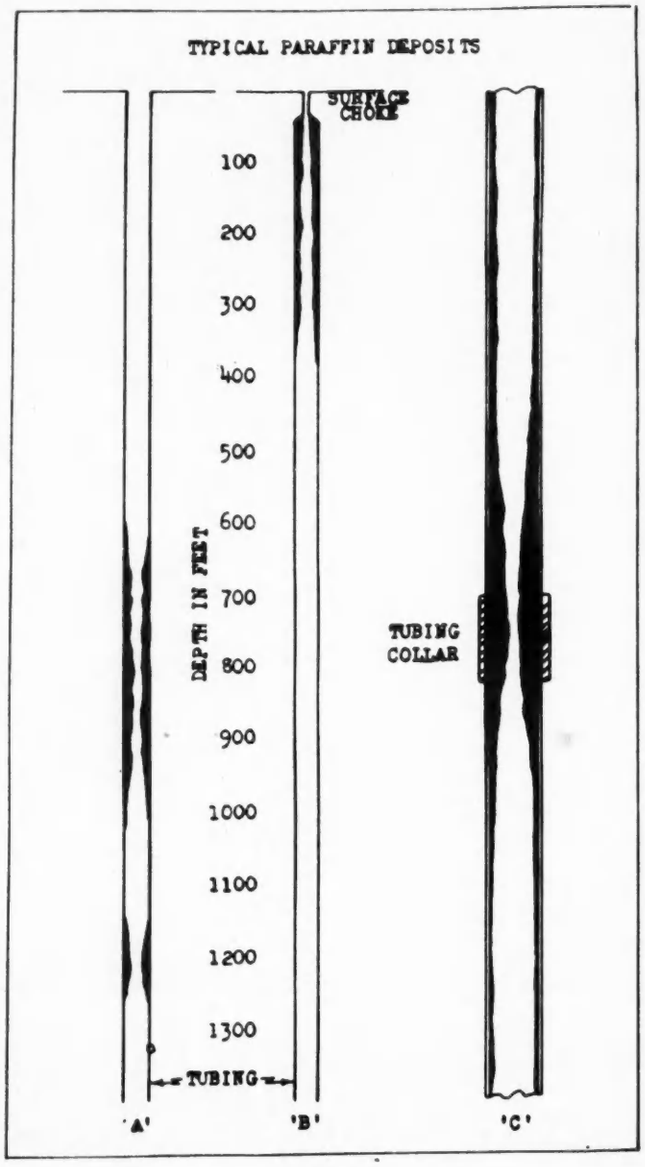
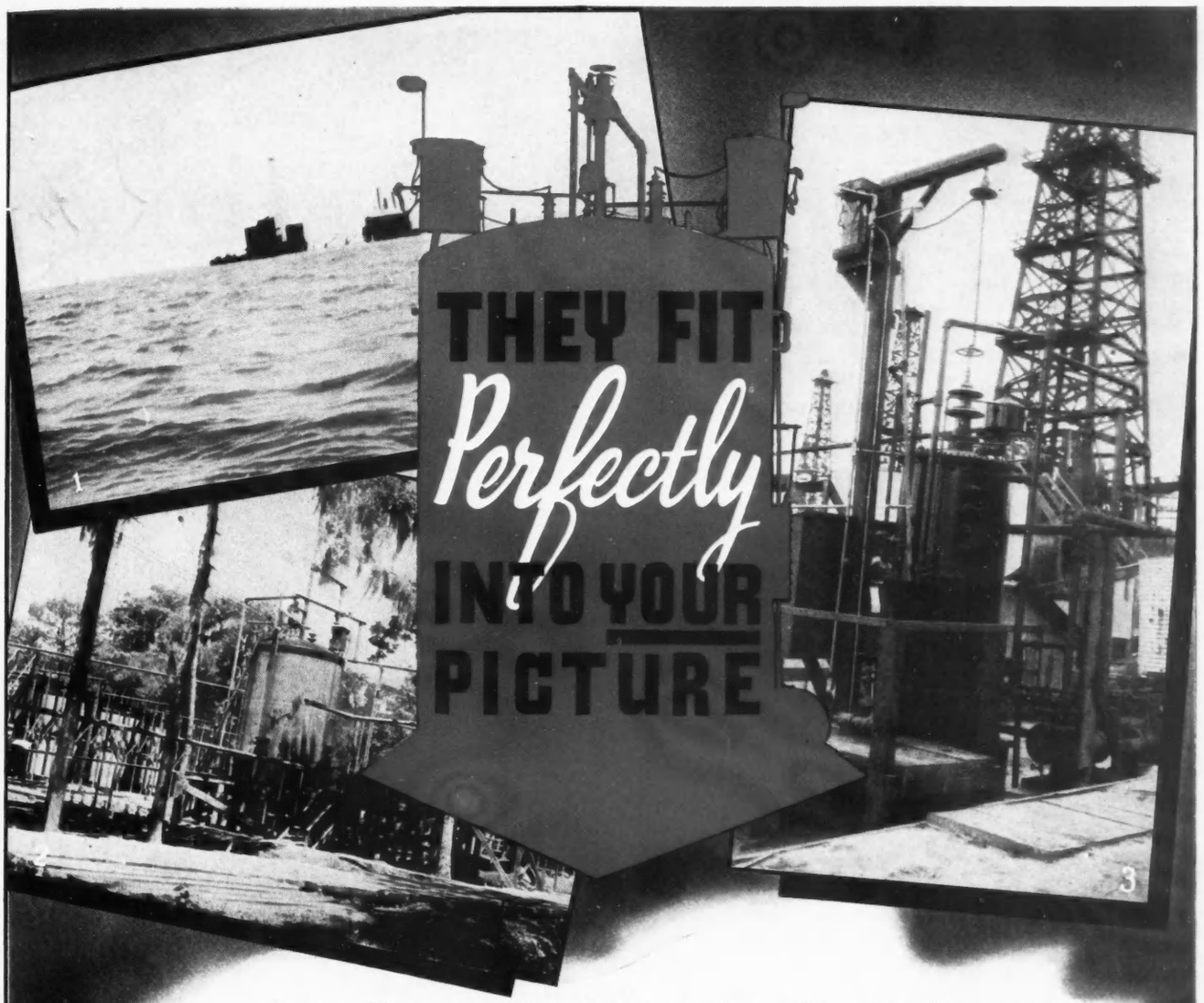


FIGURE 2



Petreco Electromatic Dehydrators are designed so that plants can be made up of multiple units, providing an exceptionally high degree of flexibility and portability. This in turn permits adaptation to practically any field, well or operating condition; increasing or decreasing capacities according to changing production requirements; and unusually high salvage value in any emergency.

The illustrations here give some idea of the wide range of applications to meet unusual field conditions. Figure 1 shows a plant located thirty-five miles from the mainland and more than fifty miles from a power line, almost in the Gulf of Mexico. Figure 2 is a single unit plant installed on elevated platforms in order to avoid the hazards of floods which annually cover a large area in this field. Figure 3 is a flow line unit installed in a space not much larger than the dehydrator itself, which is only three feet in diameter.

Wherever emulsified crude is produced, Petreco Electromatic Dehydration can meet the requirements involved. Petreco engineers will submit preliminary plans and estimates covering any specific problem without cost or obligation.

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the fluid at a higher temperature and increasing the velocity, enabling the producer to minimize paraffin trouble. Observance of the records of many companies seems to disprove this theory. The paraffin trouble seems a little more acute in the smaller strings. A possible explanation would be that heat radiates more rapidly from the center of a small pipe than from the center of a larger one, and that it takes less deposit to cause trouble in a small pipe than in a larger one. Atmospheric temperature will affect deposition in well heads, flow lines, and tank bottoms. When a well produces as much as 20 percent bottom-hole water, the specific heat of the water being more than twice that of the oil, the well usually ceases to be troubled with paraffin deposits.

A study of paraffin problems experienced by many of the operators of the field proved that the northern part of the field has considerable more paraffin trouble than the southern part. Two possible reasons for this difference are:

1. The average fluid level in wells south of Kilgore is lower than those north of Kilgore.

2. In the northern part of the field the gravity of the oil produced will average slightly higher than that produced in the southern part. (The higher-gravity oil of the north end could carry more wax in solution in the reservoir, have lighter ends to liberate while being produced, thus precipitating more wax.)

Should the water drive of the field maintain the present bottom-hole pressure, it is likely that paraffin problems would stay about the same. With continued pressure decline, some flowing wells will have less paraffin trouble; however, when the wells are pumped, at least some of the wells will have paraffin trouble until bottom-hole salt water percentage exceeds 20 percent.

In 1939, two companies experiencing considerable paraffin trouble in the field estimated that the deposit was 100 feet farther down the hole from the surface, indicating possibly a decline in fluid level. One of these companies cleans its troublesome wells on schedule. This company has recently increased the time interval of cleaning some of the wells with small tapered strings from three to four weeks. The deposit is less troublesome now than it was one year ago on the three-week schedule.

Helpful Production Practices

Producing flowing wells rapidly minimizes paraffin troubles. Wells with 2- and 2½-inch tubing seldom cause any paraffin trouble if produced at a rate in excess of 20 barrels per hour. Where free gas is found in the southeastern part of the field, it is well to keep the gas-oil ratios as low as possible. In pumping wells, the use of gas anchors theoretically minimizes paraffin trouble; however, no evidence that wells without gas anchors caused more trouble could be found.

Each well offers an individual problem. A slight change in the method of production often will help a troublesome paraffin condition. The first consideration for a well making paraffin is to study the method of production to determine if the precipitation of the deposit can be eliminated. In wells where the deposit cannot be prevented, a chemical, heat, or mechanical method of removal is commonly used.

Go-Devils

For several years some operators have been using "go-devils," or in other words, self-operating tubing scrapers. Two such scrapers are illustrated in Figure 3. The scraper is usually 1 foot to 2 feet long, made with square cutting edges on both ends as illustrated. It is 1 pound to 5 pounds in weight, and of a diameter slightly less than the diameter of the tubing in which it is used.

A lubricator long enough to hold the scraper is used in placing the scraper in the well. The scraper falls to the bottom of the tubing or to a pinned collar in the fluid below where paraffin is likely to

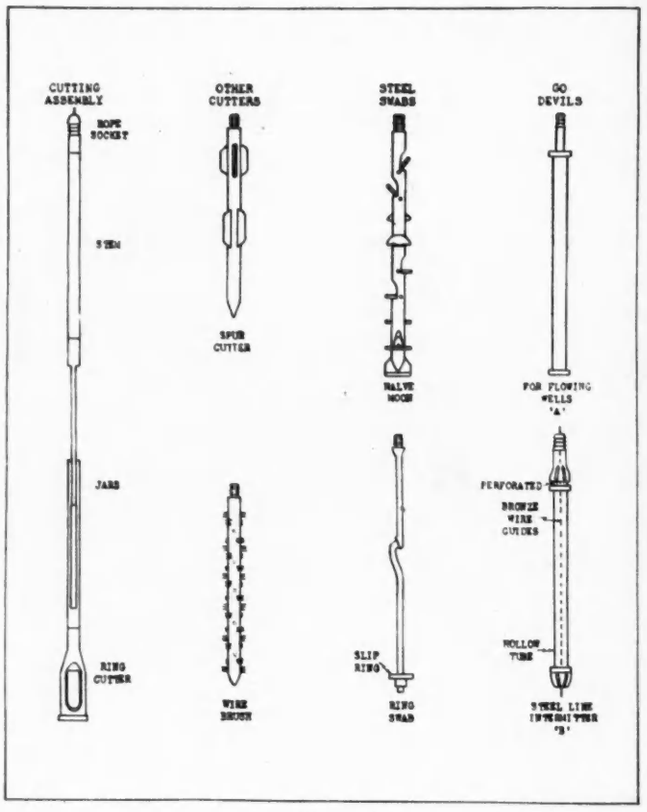


FIGURE 3

form. When the well is flowed, the scraper rises to the surface with the fluid to remain there until the well is shut in, at which time the scraper falls to its seat again. A spring and oak bumper arrangement is placed in the well head or the lubricator to arrest the shock of the tool when it reaches the surface.

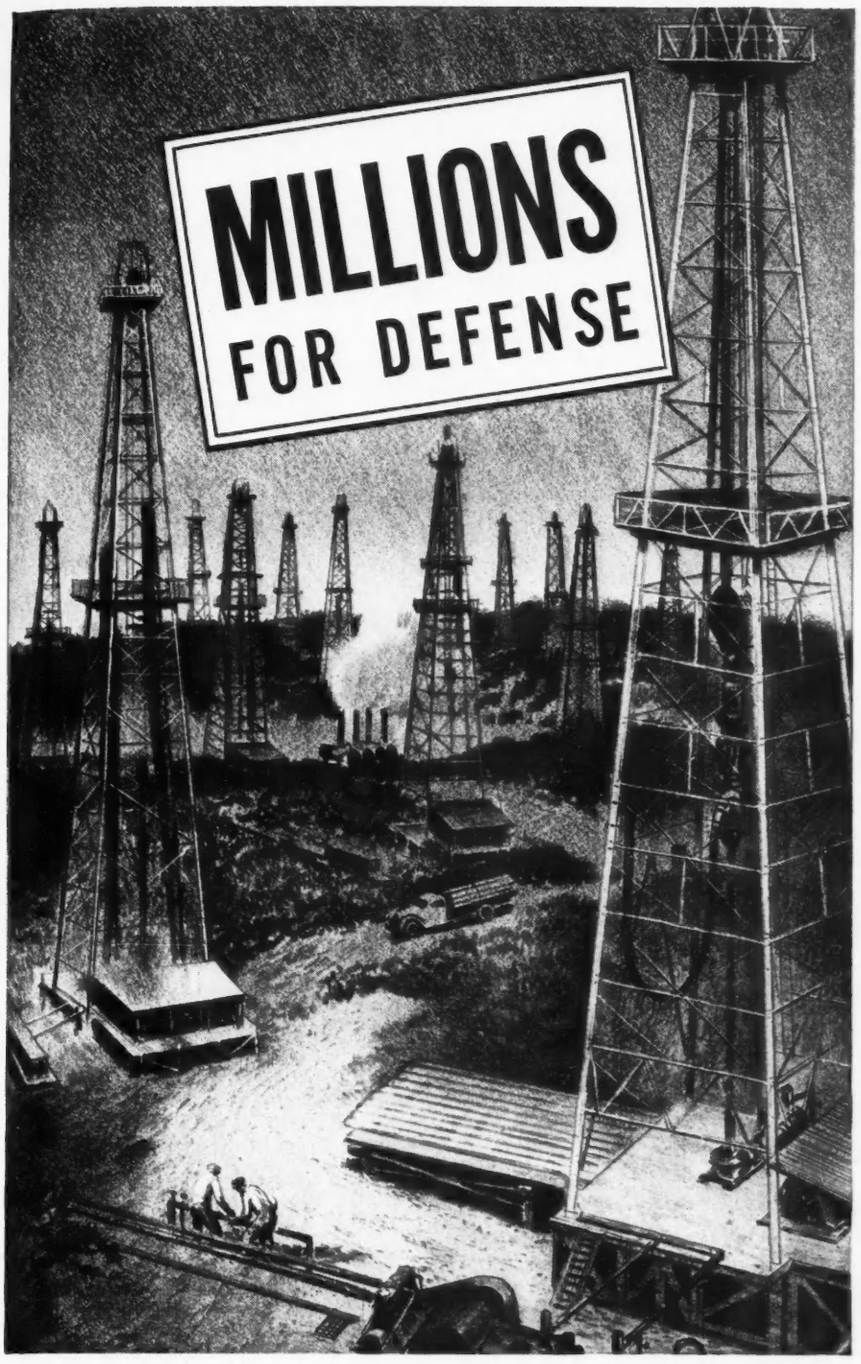
Figure 3-B illustrates a recent modification of the flowing "go-devil" to be used on wire line intermitters. Since one trip per day is usually sufficient to keep the tubing clean of paraffin, the lubricator arranged for this device has a trigger catch which holds the scraper in the lubricator until the switcher releases it for another trip.

Chemical Treatment

Known solvents of paraffin are listed in Table 1.

Each of the substances listed should be handled carefully, as they will dissolve the fats from one's skin, and with continued contact cause serious skin abrasions. This is especially true of solvents containing sodium hydroxide.

Carbon disulphide is a much better solvent of wax



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STRINGING THE PIPE. This line was laid in three-joint welded sections, with a coupling between sections. The accurately beveled ends of NATIONAL Seamless materially help welders and couplers produce dependable joints at a rapid rate. Since this line operates at pressures up to 500 pounds per square inch, sound joints are essential.

THE DOPE GANG is here completing the process of coating the pipe to prevent soil corrosion. The smooth, rolled surface of NATIONAL Seamless Pipe is well adapted to the application of protective coatings. Bends like the one shown here were made in the field without difficulty, because the pipe is uniformly strong and ductile.

THE COMPLETED LINE, ready for lowering into the ditch. Started early in October, this project was finished early in December, in about nine weeks' time. All along the line, from delivery until the last pipe section was underground, the uniformly high quality of NATIONAL Seamless Pipe helped speed the job.

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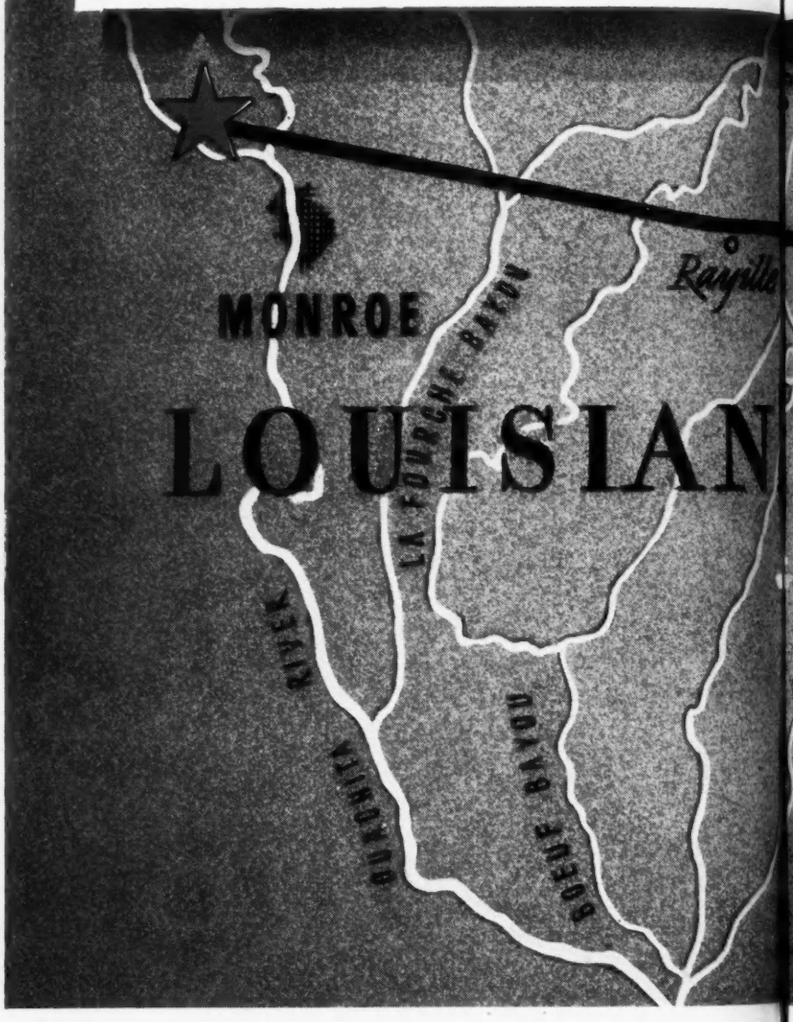

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near Jackson, Miss., as well as gathering lines and casings, is a good indication of the standing of NATIONAL Seamless with pipe line engineers, and industrial men in general. You'll find this pipe used in important lines everywhere.

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TABLE 1

NAME	Wt./Gal. (Pounds)	Type	Remarks
Carbon Disulphide....	10.50	Wax Solvent	Dangerous—Inflammable.
Carbon Tetracloride...	13.20	Wax Solvent	Non-Inflammable, Base of many solvents.
Hydrocarbons of Oil... (Gasoline)	5.84	Wax Solvent	Often used for diluting heavier solvents.
Sodium Hydroxide.... (20% water solution)	10.16	Wax Solvent and heat agent	(Lye) causes heat with water.

than carbon tetracloride; however, because of less danger in using, the latter is the most common base of many of the solvents used. Some of the hydrocarbons of oil are fair wax solvents, yet because of their lightness are not very effective. Sodium hydroxide compounds have some solvent power, yet become effective because of the heat they generate when mixed with water. Carbon tetracloride and carbon disulphide will promote corrosion when used in large quantities. Since a small amount of these substances are generally used, no trouble from corrosion has been observed. Sodium hydroxide is considerably more corrosive than the other chemicals.

Flowing Wells

Chemical solvents may be used to remove paraffin deposits from the tubing of flowing wells without running a mechanical scraper. In treatments of this kind a lubricator is used to induce the solvent into the tubing, as the well is usually under pressure. The effectiveness of the treatment will depend on getting the solvent in contact with the paraffin deposit. For best treatment one must know the depth of the deposit and the fluid level in the well. Should the fluid level be above the deposit, the use of a solvent somewhat heavier than the oil is believed to be desirable—in East Texas 7 to 9 pounds per gallon. When the major deposit is at the fluid level the use of a solvent of the same weight as the oil is preferable; East Texas crude weighs 6.41 pounds per gallon. Should the fluid be below the deposit, use the latter weight, and once or twice during the treatment open the well head momentarily to bring the solvent that has drained past the deposit back in contact with the paraffin. Figure 4 illustrates a practical method of obtaining the portions of carbon tetracloride and gasoline to secure any desired weight of solvent.

When a well has a very heavy paraffin deposit it has been found advisable to treat in two or three stages. By this means the paraffin which has been loosened in the first stage is removed from the well, allowing the solvent of the next stage to come in more intimate contact with the remaining deposit.

In general most companies have been disappointed in their attempts to clean flowing wells with chemicals. Many of the companies that have accomplished successful jobs have found that it is more economical to scrape flowing wells mechanically.

Pumping Wells

Solvents have been an effective aid in pumping wells. The ability of the rods to stir the solvent into the deposit makes their use more effective. An example of how one company has used solvents follows:

Well Data: 28 wells operated by one power on the east side of the field, static fluid level below 1800 feet, 50 percent of the wells cause paraffin trouble,

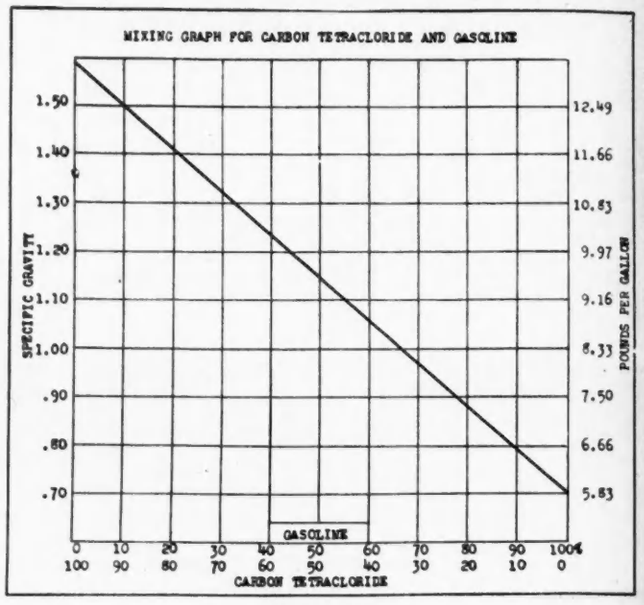

FIGURE 4

flow lines often have considerable paraffin deposit in the first 100 feet from wells.

Condition of Wells Prior to Treatment:

1. Decrease in production.
2. Sucker rods hanging up, or slow drop.

Procedure:

1. Well is hooked off.
2. Five gallons of solvent is poured into tubing by removing stuffing box.
3. Well is shut in over night.
4. In the morning fluid is pumped to the surface and well is hooked off again.
5. Well is idle two to four hours.
6. Well is pumped into stock tank.

Cost of treatment—$9.

Remarks: Nineteen out of 20 such treatments were successful. The paraffin deposit was removed from the tubing; the flow lines were cleaned; and some stock tanks showed evidence of reduced bottoms. In many instances, immediately after the above treatment, rods were pulled for replacement, or check up on condition of pump parts. The average cost of such a pulling job was $18.

Some wells have insufficient gas in the oil to partially empty the tubing when they are shut down. In such wells the chemical can be placed in the tubing through a long piece of copper tubing. Twenty feet of ⅜-inch tubing has been found satisfactory for this work.

Some of the companies prefer to circulate their wells through the casing while treating. Others add chemicals at regular intervals to avoid large accumulations.

One company has the rather unique idea of using ¾-inch extra-heavy pipe for the top 1000 feet of sucker rod, or of sufficient length to penetrate the paraffin zone. A check valve and perforated chamber at the lower end of the pipe allows solvent to be lubricated to the tubing, using a jack-operated chemical feeder on the surface. The experiment is new and results have not been conclusive. Should the above method prove unsatisfactory, a portable pump and

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TABLE 2

Company	Description of Equipment	Purchase Cost
1	(1) Heavy-duty winch truck (all purpose)	$5,596
	(2) Heavy-duty winch truck (all purpose)	3,221
	(3) Heavy-duty winch truck (all purpose)	6,392
2	(1) Heavy-duty winch truck (all purpose)	6,000 est.
	(2) Heavy-duty winch truck (all purpose)	5,000 est.
3	(1) 3-Ton heavy-duty winch truck	.....
	(2) 3-Ton heavy-duty winch truck	.....
	(3) 1½-Ton heavy-duty winch truck (paraffin and swabbing)	.....
4	Trailer equipped with auto engine and winch (paraffin and swabbing)	.....
5	1½-Ton truck, light winch, ⅜" cable (swabbing) On same truck wire line equipment (paraffin)	2,534
6	½-Ton truck, small individual motor spudding unit (paraffin)	1,550
7	½-Ton pick-up, wire line equipment (paraffin)	1,000
8	½-Ton pick-up, wire line equipment (paraffin)	970

heater will be used to pump hot oil or water through the ¾-inch pipe to melt the paraffin accumulations.

Heat

The principle use of heat in combating paraffin problems is to clean out flow lines and tank bottoms. One operator says that oil should be 140° F. and water 160° to 165° F. for successful cleaning work. Flow lines on top of the ground get a good cleaning out during the summer months, and for this reason cause less paraffin troubles than do buried lines.

Mechanical Scraping

There are approximately 26,000 producing wells in the East Texas field. Of this number, about 18,000 are flowing and 8000 are on artificial lift—either pumping or gas lift. A large percentage of the pumping wells are not troubled with paraffin deposits, because of the amount of water produced with the oil. From the above figures one can realize why deposits in flowing wells are more common than in pumping wells. In most instances, deposits are cleaned out of flowing wells with mechanical scrapers. Table 2 lists equipment used by several of the companies in the East Texas field.

Table 3 lists cost data on scraping wells for these same companies.

All the cutters used by the eight companies listed are illustrated in Figure 3. These companies flow their wells while scraping. Steel swabs which cut while coming out of the hole must be used carefully for usually only a portion of the paraffin can be removed with one swab. These tools definitely remove the deposit from the well. Cutters loosen the paraffin, yet depend on the oil to carry the paraffin out of the tubing. In general, cutters are faster as fewer trips are usually necessary. Some companies use jars on the tools, others prefer to use sufficient weight to carry the tools through the deposit. When using light equipment fewer tools will be lost when jars are used.

TABLE 3

Company	Type Equipment	No. Wells Scraped 1939	Average Time Per Well Minutes	Average Cost Per Well	Total Cost 1939
1	Heavy all-purpose	267	160	$12.35	$3,298
2	Heavy all-purpose	137	165	16.05	2,204
3	Heavy all-purpose	345	240	23.50	8,107
4	Med.—swabbing & paraffin	145	190	11.98	1,737
5	Med.—swabbing & paraffin	1272	66	3.50	4,452
6	Light spudder-paraffin	1140	84	4.75	5,415
7	Light—paraffin	1106	100	3.50	3,859
8	Light—paraffin	379	165	6.08	2,304

Figure 5 illustrates the small spudding unit used by Company 6. The reel and spudder are both operated by a 4-horsepower gasoline engine. The line is 9/64 inches in diameter with 5 strands of wires.

Company 4 uses a split cup swab after each scraping job.

Companies 5, 6, and 7, have 200, 116, and 178 strings of small tapered tubing, respectively. This partially accounts for the greater number of scraping jobs these companies do. These three companies clean their wells on regular schedule. Companies 5 and 7, scrape many of their small tapered-string wells as often as every three or four weeks. The timing of the scraping work is the result of records kept on each scraping job. For efficient use of light equipment, wells should be cleaned before the deposit becomes heavy.

When heavy lines and tools are used, such as is the practice with all purpose units, it is necessary to string the line over the crown block of the derrick. For wells without derricks, portable masts are used. Company 1 contracted 26 cleaning jobs for wells without derricks in 1939. The average cost of these jobs was $24 each, or a total of $624. This same company has a light truck which is used for the bottom-hole pressure work during a portion of each month. This equipment could have handled the above cleaning work.

The total utility of the unit used by Company 5 is shown in Table 4.

TABLE 4

Work	No. Jobs	Hours
Paraffin	1,272	1,394
Swabbing	48	89
Fishing	6	23
Measuring	24	36
Shooting	1	6
Total	1,351	1,548

A power take off from the truck engine drives the reel holding the ⅜-inch cable. A cat head operated from the power take off is used to drive the equipment for paraffin cleaning, measuring, and shooting work. All of the work listed is handled by a two-man crew. One heavy-duty winch truck, which is available, is not burdened with any of the work listed in the table. This arrangement of equipment is very flexible and requires a minimum investment.

A breakdown of costs for Company 5 on cleaning paraffin in 1939, is shown in Table 5.

TABLE 5

METHOD	No. Jobs	Minutes Per Job	Cost Per Job	Total Cost
Conventional	112	171	$17.00	$1,904.00
New	25	120	12.00	300.00
Average	137	165	16.05	2,204.00

"Conventional" in Table 5 refers to the use of a long lubricator and tubing board. Figure 6 illustrates the equipment used in the new method. The stem is a 1-inch pipe filled with lead. The lubricator is only long enough to hold a 2- or 3-foot scraping tool or swab. A 1-inch stuffing box, and an oil saver are used to lubricate tools into the well. These 1-inch stuffing boxes sell for $12; 2½ jobs will pay for the

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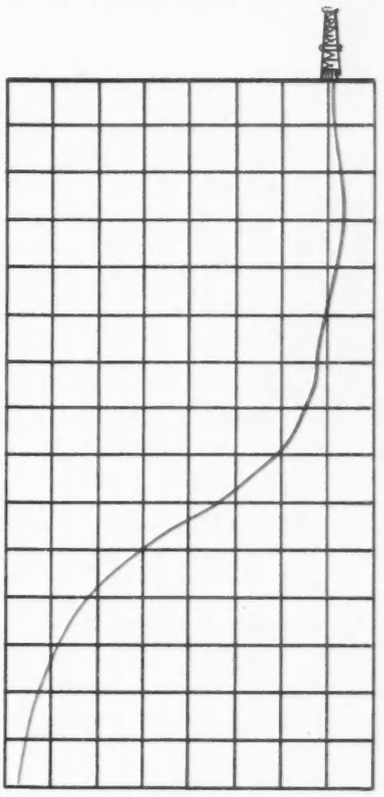

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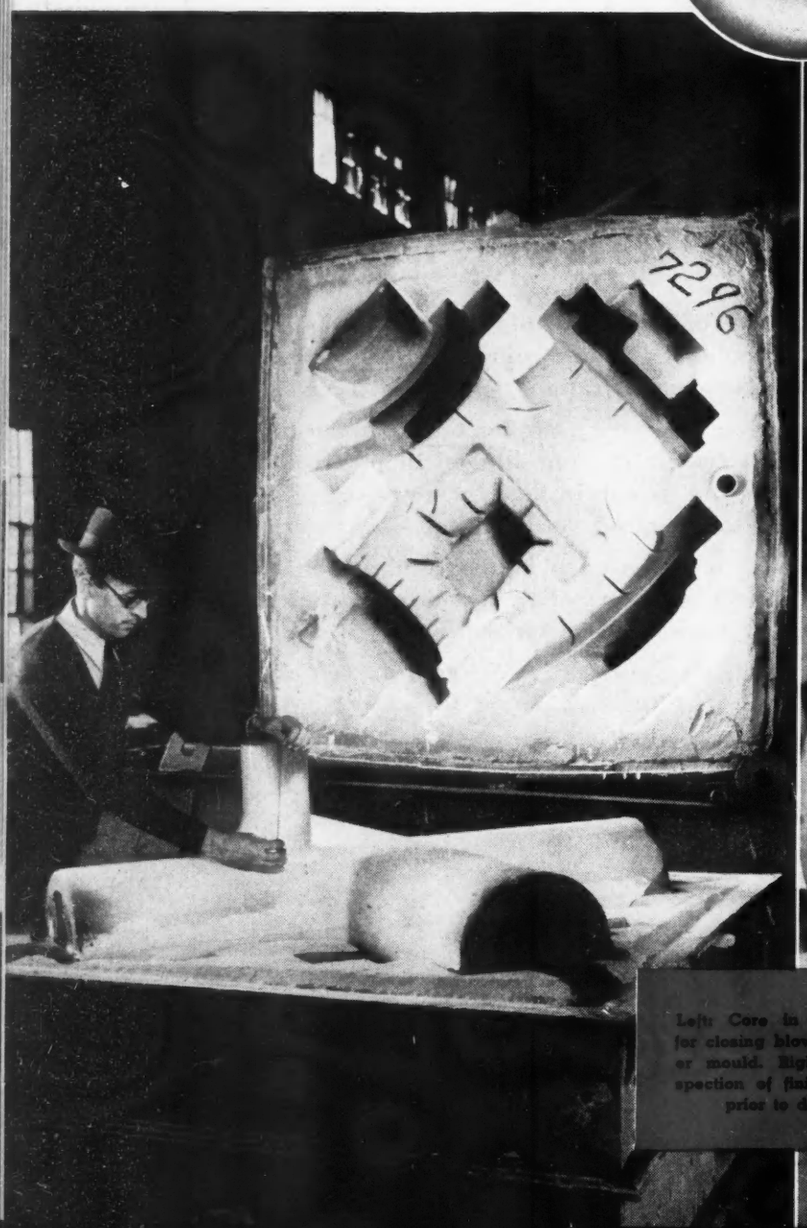
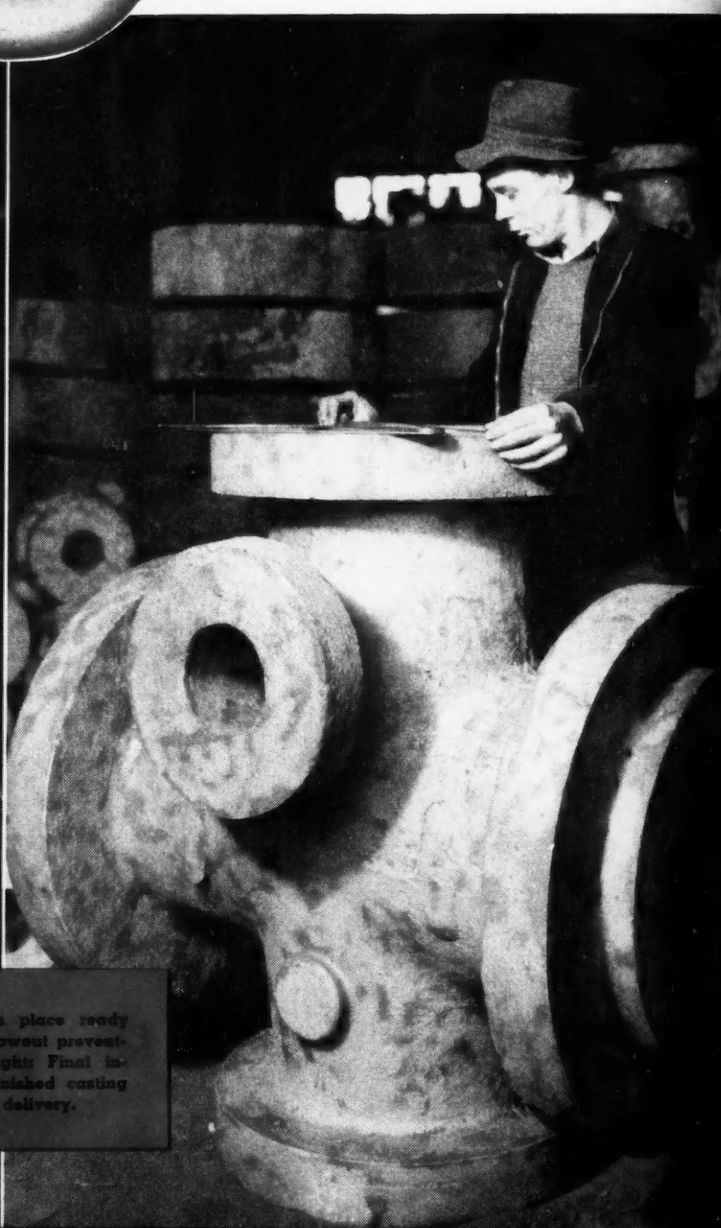
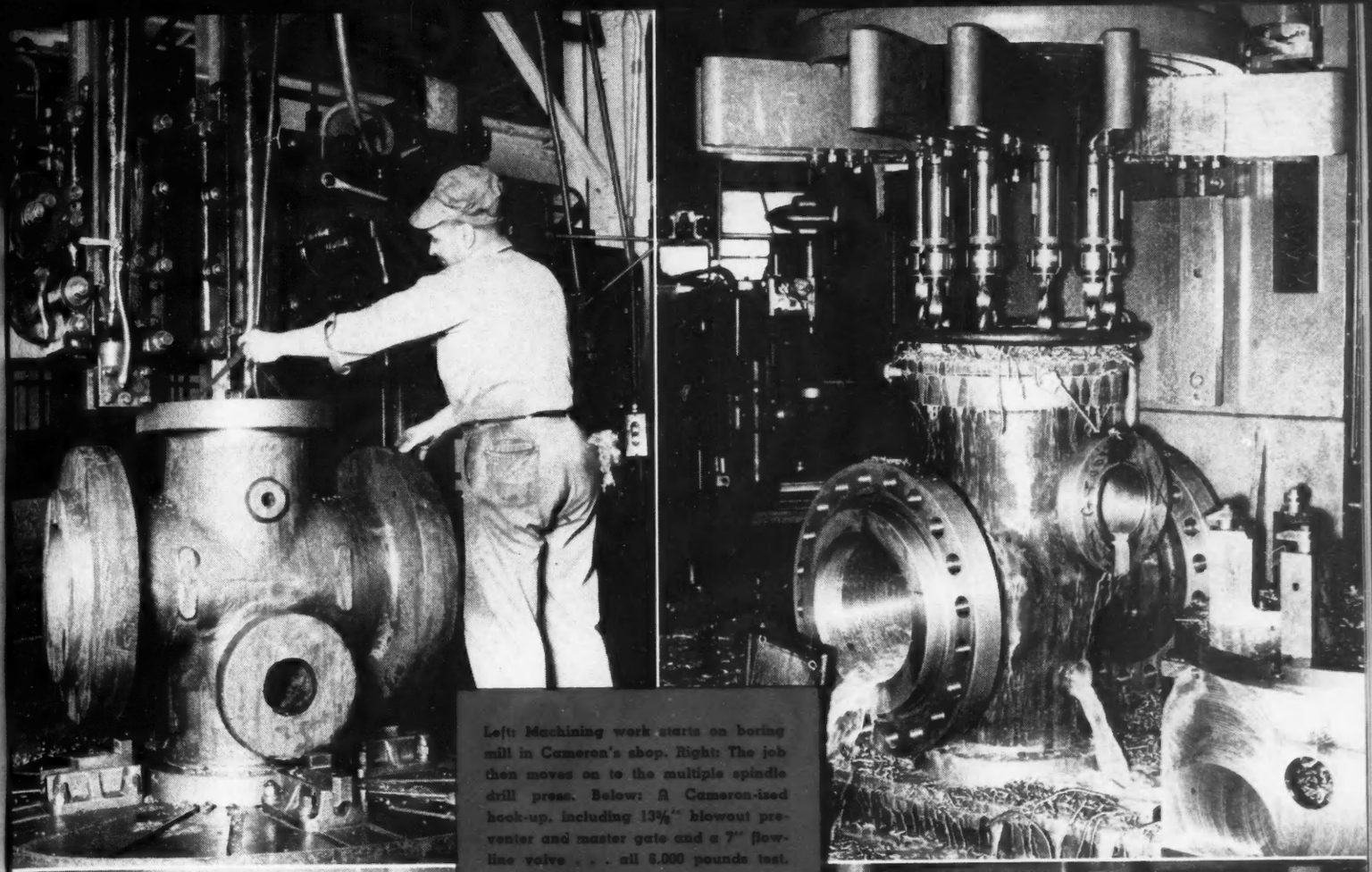
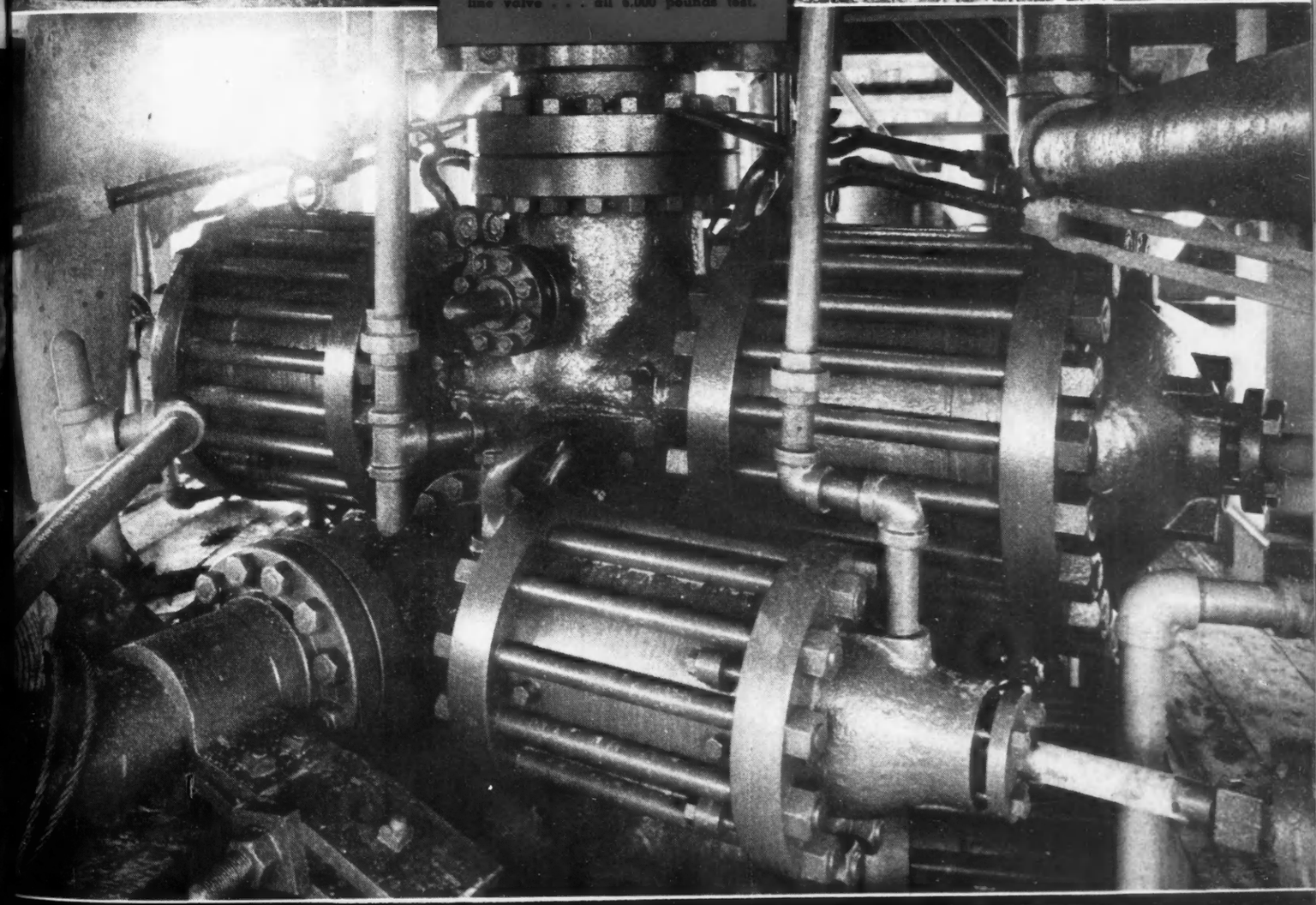




Left: Core in place ready for closing blowout preventer mould. Right: Final inspection of finished casting prior to delivery.



Left: Machining work starts on boring mill in Cameron's shop. Right: The job then moves on to the multiple spindle drill press. Below: A Cameron-ized hook-up, including 13⅝" blowout preventer and master gate and a 7" flowline valve . . . all 5,000 pounds test.



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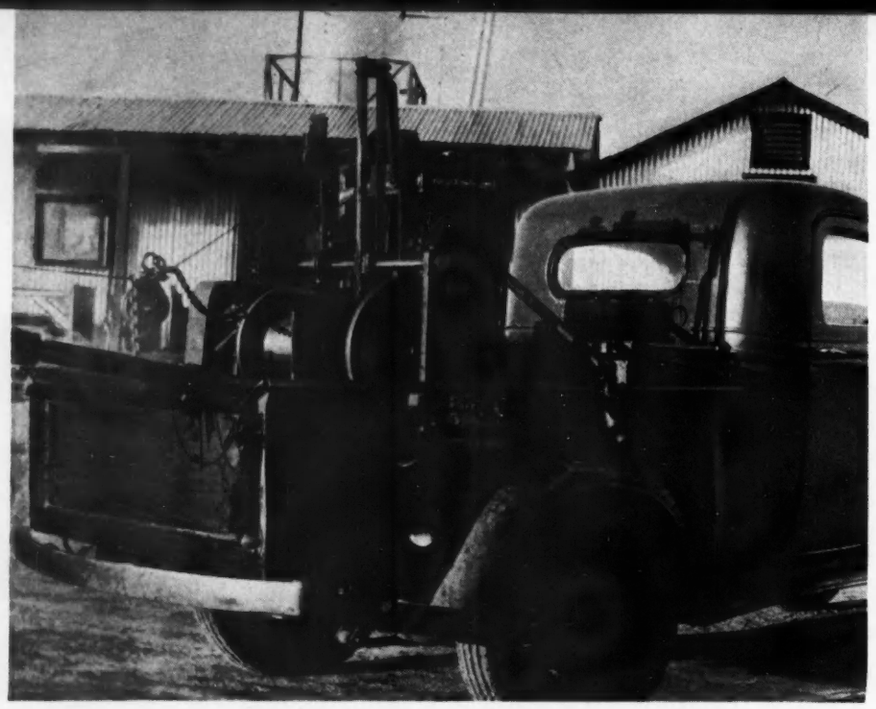

FIGURE 5

new equipment. Some companies are using pipe filled with mercury for stems above the tools. This will also enable the shortening of the conventional 30-foot lubricator.

Companies 1, 2, 3, and 4 ordinarily clean wells only when the wells die or the production has almost ceased, therefore, have fewer scraping jobs. It is possible that the wells causing trouble could be cleaned more often with less operating expense. It is probable that this could be accomplished with a considerably smaller investment.

Pumping wells are often cleaned with mechanical scrapers after pulling the rods outs of the tubing.

FIGURE 6

Scrapers are often run on the rods, rather than on a string of tools. Company 4 is the only company listed which installs rod scrapers on all their pumping wells. One scraper is usually located above the pump, and several others in the paraffin zone. These scrapers clean the tubing while pulling the rods, yet occasionally the deposit becomes so heavy that a stripping job is necessary to remove the rods. On one occasion Company 4 stretched a string of rods pulling them through a heavy deposit, necessitating the replacement of the rods. When rods are pulled at reasonable intervals the rod scrapers are very satisfactory.

Conclusion

Some paraffin problems can be decreased by changing production practices. It is known that low rates of production encourage paraffin deposits, however, it is beyond the scope of this paper to determine the advisability of this practice. Many of the operators of the East Texas field fear the possibility of local water coning more than paraffin accumulation.

Wells that have a high flowing pressure generally operate flowing "go-devils" very satisfactorily.

Companies operating only a few wells in the field generally prefer to use chemicals to clean paraffin deposits from troublesome wells. There is less investment necessary for proper chemical treatment than for equipment needed for mechanical scraping.

When one all-purpose unit will handle all the service work of a company, elimination of the use of tubing board and long lubricator should result in a saving. It must be remembered, however, that the use of double stuffing box arrangement necessitates the use of a heavy stem in high-pressure wells.

The old axiom, "An ounce of prevention is worth a pound of cure," is believed to apply in removing paraffin deposits. It has proven advantageous to schedule cleaning work so as to clean the deposits from the wells before the paraffin becomes thick and hard. Light equipment can perform this work very rapidly. It is unnecessary to have a derrick on the location when light equipment is used for the scraping work. The lubricator used with light equipment usually is 6 feet to 8 feet long, and has a combination pulley, swivel, and oil saver on top. Companies using light equipment for paraffin scraping work find that fewer heavier all-purpose units are needed to take care of the heavy-duty work.

ACKNOWLEDGMENTS

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Salem Chief Factor in Illinois Production Increase

By JERRY THORP, Staff Writer

The unpredictable Lake Centralia-Salem field of Marion County, Illinois, the sole factor in the state's phenomenal gains in production since the first of the year, will attain a daily output of 300,000 barrels before the advent of summer in the opinion of most operators—a figure far in excess of the wildest speculations hazarded on peak production for all of Illinois a year ago.

During the week ended February 10, the field averaged 237,500 of Illinois' 385,500 barrels of daily production, gaining 32,400 barrels over the previous week. Early in December, immediately after the discovery of the field's fifth and most lucrative productive horizon, the Devonian lime, the pool was making but 180,000 to 190,000 barrels a day.

Rapid development of the horizon, necessitated because of the many road strips, school house and church yard leases that force majors to offset, was already reflected in January's production for Illinois which totaled 10,825,000 barrels, an all-time peak for the state. In all of 1936, first year of new development, Illinois produced but 4,445,000 barrels. Its 1937 production totaled 7,426,000 barrels; in 1938 it amounted to 23,929,000 barrels, and in 1939 production totaled 94,303,000 barrels.

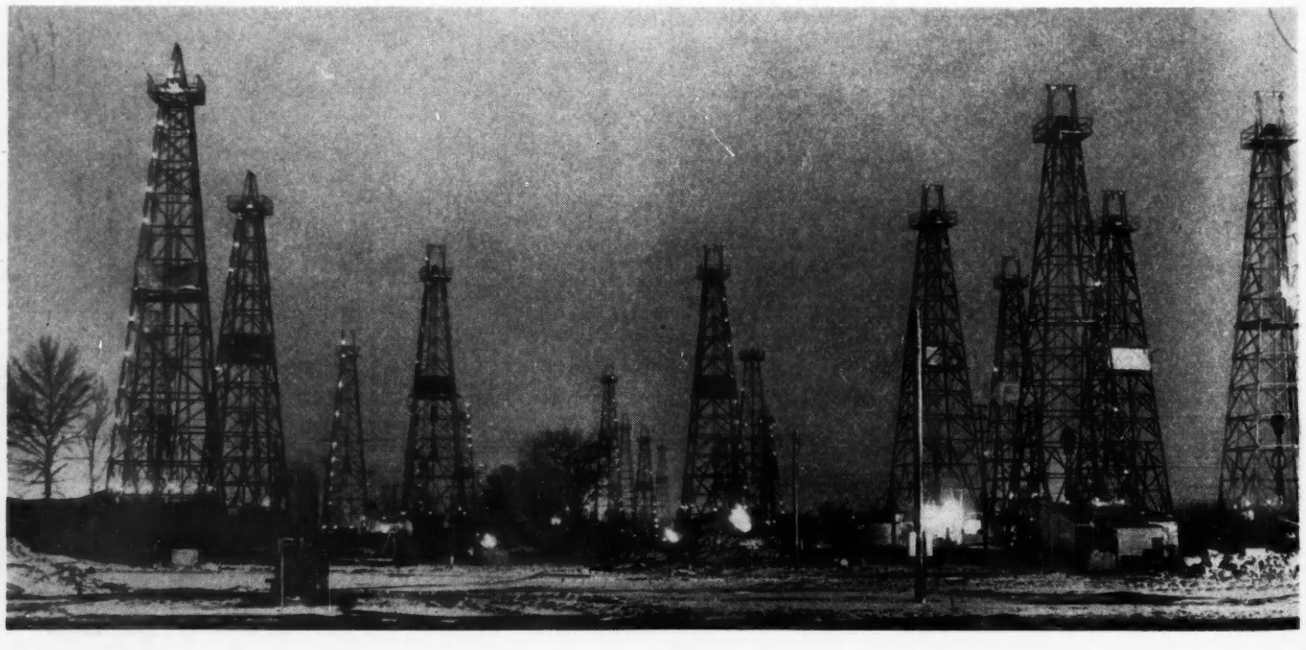
During the last four months of 1939, the state's yield averaged more than 10,000,000 barrels a month, ranging from 10,222,000 to 10,601,000 barrels. In December it had decreased to 10,434,000 barrels but completion of about a dozen big Devonian wells in the Lake Centralia-Salem pool during January boosted the state's output to new heights.

Fifty Devonian Wells

As of February 14, the field had yielded nearly 50 Devonian wells ranging from 1800 to more than 10,000 barrels each on initial potential production tests. At least seven of the completions, all within the past three weeks, have been rated at better than 7000 barrels a day initially. Largest completion to date, not only in the field but in the state, is Paul Rossi's Brooks 9, SW NE SW 29-2n-2e, which flowed 5156 barrels in 12 hours from pay at 3376-3438 feet after a 5000 gallon acid treatment, to attain its better than 10,000-barrel rating.

On February 11, The Texas Company, discoverer of and largest operator in the field, completed four wells with a combined initial potential of 31,680 barrels, three of the producers ranking as the second, third and fourth largest completions in Illinois. Two days later the company brought in a 9888-barrel producer which supplanted the former second ranking well.

The Devonian lime is found at depths averaging 3340 feet and the pay section, ranging from 40 to 50



General view of Lake Centralia-Salem, Illinois' most prolific oil field, taken at night by the light of gas flares. Devonian exploration has boomed the field's drilling program. Five horizons are productive.

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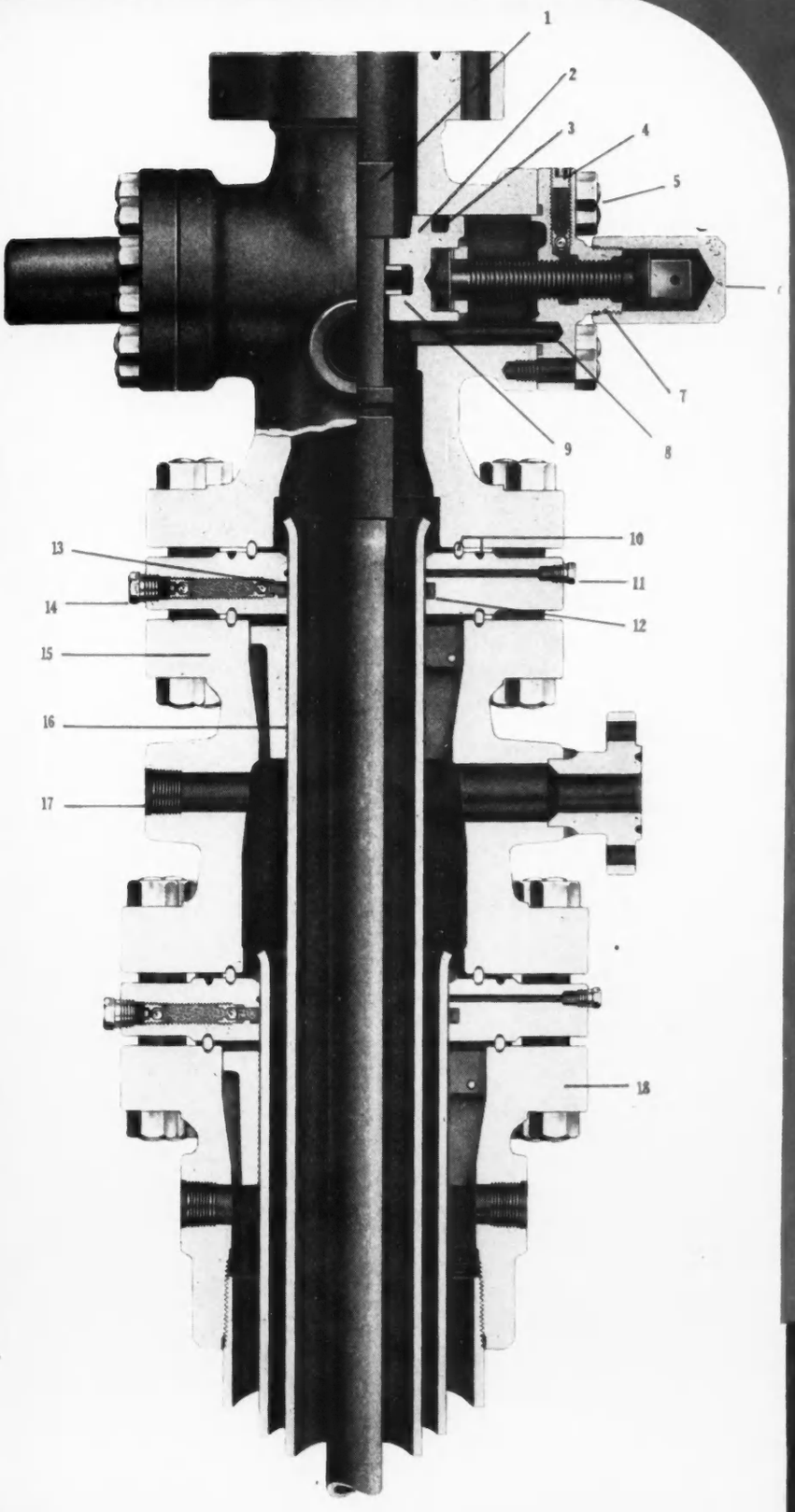

The cross-section drawing presented herewith clearly illustrates the numerous exclusive features provided by Cameron Ram-Type Tubing Control Heads, Casing Heads and Spools.

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REFERENCE TO FIGURES:

1. Male by female hanger nipple for suspending and sealing tubing on closed rams; 2. Ram; 3. Ram seat seal; 4. Repackable plastic packing seal; 5. Bolted bonnet; 6. Ram screw cap; 7. Ram screw; 8. Ram guide pin; 9. Self-feeding ram packing element; 10. Restricted R.P.I. ring groove (inner), standard R.P.I. ring groove (outer); 11. Hydraulic test port; 12. Recessed seal ring; 13. Half round water course; 14. Repackable plastic packing seal; 15. Casing Spool; 16. 3-segment slips; 17. Flanged or threaded outlets; 18. Casing Head housing.

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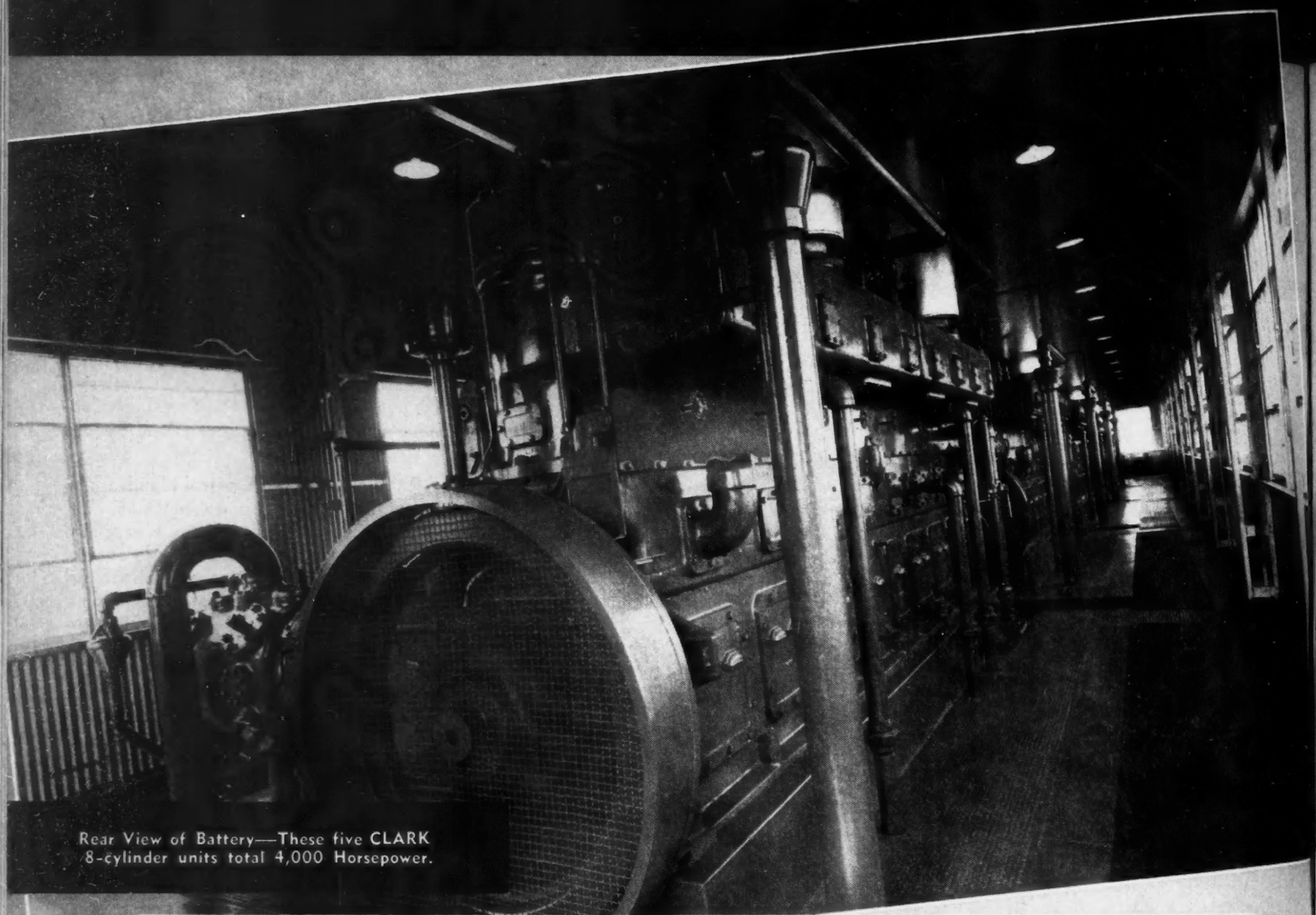
8-CYLINDER, 800 HP



Rear View of Battery—These five CLARK 8-cylinder units total 4,000 Horsepower.

View of Compressors looking down walkways above compressor cylinders. Each cylinder at right represents 100 H.P.

H.P. CLARK "ANGLES"

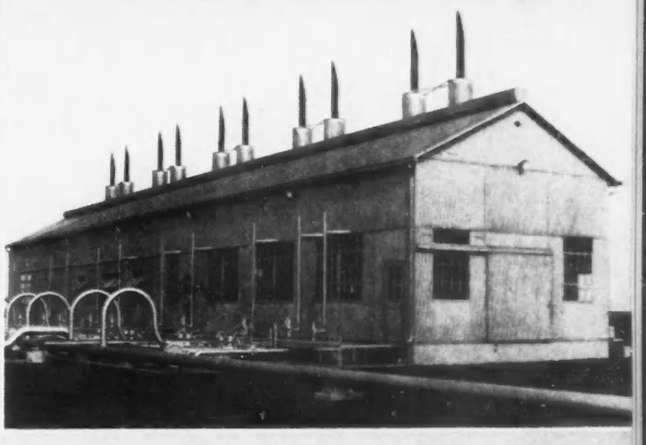
Battery of 5 8-cylinder, 800 H.P. CLARK "Angle" Compressors, Coastal Recycling Plant.

Recycling Gas at 2,000 Lbs. Discharge Pressure

THE Photographs show several views of the big CLARK "Angle" installation in the new recycling plant of the Coastal Recycling Corporation at Banquete, Texas. This plant is returning gas to the formation at approximately 2,000 pounds discharge pressure.

The compact design of the CLARK "Angle," maintaining Clark standards of extreme simplicity,—is one of the unit's outstanding features. These machines as compared with the older horizontal compressors of equal capacity require less than one-fourth of the concrete for foundations and less than one-half the floor space. Batteries of CLARK "Angles" are customarily installed in buildings only 24 feet wide.

The CLARK "Angle" has become the preferred equipment for any service requiring compressing of gas, particularly booster stations, gasoline plants, recycling and repressuring. Though of lighter weight and higher speed than the famous CLARK 2-Cycle Horizontal Compressor, it has proved in use to be the equal of the horizontal in efficiency and reliability while offering four substantial savings, viz: Lower transportation and erection costs, smaller foundations and floor space, fuel saving due to CLARK Super-2-Cycle Fuel Injection, and lower maintenance due to extreme simplicity of design. It will pay you to thoroughly investigate these savings.



Exterior of Compressor Building Housing the Battery here shown. CLARK "Angles" Can be Installed in buildings only 24 feet wide.

CLARK BROS. CO., INC. . . OLEAN, N. Y., U.S.A.
Export Offices: 30 Rockefeller Plaza, New York. Domestic Sales Offices and Warehouses: Tulsa, Okla.; Houston, Texas; Chicago, Ill.; Boston, Mass. (131 Clarendon St.) West Coast Offices: Smith-Booth-Usher Co., Los Angeles, Cal. Foreign Offices: 72 Turnmill St., E. C. 1. London; 4 Str. General Poetas, Bucharest, Roumania.

CLARK

A new $20,000 church is under construction on the famed one-acre Young Chapel site, where four wells are producing from five horizons. The church, with a congregation of less than 50 persons, has a full-time minister and $80,000 in its treasury.

feet in thickness in most instances, is topped in the neighborhood of 3392 feet.

Development of the formation was begun by Kingwood Oil Company in Section 20-2n-2e, in the northeast part of the field. The formation so far has shown a southwestern trend. One of the factors responsible for lack of much exploration toward the east is that one dry hole was reported about a mile northeast of the discovery well, in an area where light production is obtained from the overlying McClosky lime.

Decline Rapid

Although the horizon is too recently discovered to accurately determine its rate of decline, it is believed Devonian wells will have production curves with sharp declines, as do the field's McClosky producers. A year ago many McClosky wells were brought in with initials of 2000 to 3000 barrels, while today new wells in those same areas are gaged at 200 to 300 barrels a day.

With the exception of the little-explored St. Louis lime, laying just below the McClosky, the field's other productive horizons are sand formations, the Benoist and Aux Vases, which have shown a remarkable longevity considering the lack of spacing or orderly development in the field. The Benoist is found at an average depth of 1770 feet, Aux Vases at 1840 feet, and McClosky at 1990 feet.

Remarkable feature of the Devonian development and its resultant production increases has been the ability of operators to satisfactorily market their oil. There is far less variance in the price paid by independent refiners and that of the Sohio Corporation, the state's principal crude buyer, than a year ago. Present bottom prices are reported at from 85 to 90 cents a barrel, compared to the field's posted price of $1.05.

Drilling Problems

Development of the Devonian has brought with it a number of problems for the contractors. Drilling and completion time for Devonian wells generally totals more than a month, and even then the contractor and operator consider themselves lucky. Average cost of drilling and equipping a Devonian well in the field, without much allowance for trouble, is $30,000. Princpal difficulty in drilling beneath the McClosky is caused by several porous formations in which circulation is often lost for one or several days. The resultant stuck tools and consequent fishing jobs are, more often than not, long and costly.

As an example of what can happen, The Texas Company spudded its McCollum 20 early in the development of the Devonian horizon, late in December. After drilling below 3300 feet tools were stuck just below 1600 feet. Following 10 days of fishing, the hole was plugged back to 1600 feet to whipstock around the lost iron. After several other delays, the well on February 14, was drilling at 2000 feet. The same company's McCollum 21 was spudded December 28, had few difficulties, and was completed in 41 days.

At least two years will be required to develop the field's Devonian horizon, barring the discovery of deeper productive levels, which would delay complete development of the Devonian until the flush had been drained from the lower formations. Nearly all geologists and operators familiar with the field are of the opinion that the St. Peter, corresponding to the Wilcox of Oklahoma, will be found productive, although no wells have been drilled below the Devonian depth as yet.

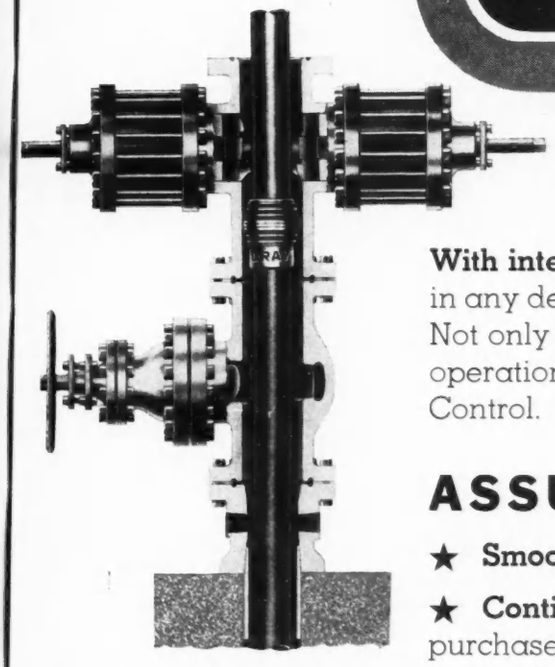
First Illinois' production in the Devonian was uncovered late in 1938 in the 33-year-old Benoist sand pool at Sandoval, also in Marion County, about seven miles northwest of the Lake field. A series of dry holes followed the discovery and development lagged for several months until the second producer was completed. A whirlwind campaign ensued in which nearly 30 wells were drilled in a few weeks. The pay area is found at 2920-26 feet, and because of the comparative small section of saturation, salt water soon became a major problem. Many of the wells make several hundred barrels of salt water for each hundred barrels of oil. As yet this difficulty has not become a major problem in the Lake area.

Other fields in the state producing from the Devonian include the Tonti, Marion County, where the 4000-barrel well has been completed, and the Centralia townsite field, Clinton County, where there have been eight completions with initials ranging from 200 to 1170 barrels. A light pumper was also completed in the formation in Bond County to give the county its only production.

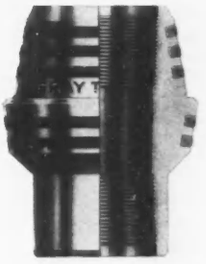
The formation was found dry in one test on the east side of the basin in Wayne County, but Pure Oil Company is now drilling Stella Billington 3, in the Cisne field of Wayne County, at 4500 feet, expecting to reach the Devonian within the next 600 feet.

★★★ A LONGER SPAN OF USEFULNESS

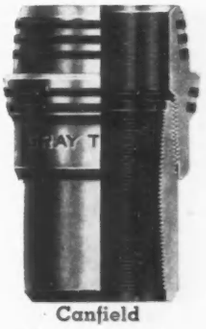
WHEN SETTING CASING WITH GRAY SYSTEMS OF WELL CONTROL



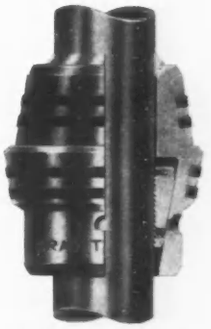
Casing Hanger being lowered through control equipment into casing head bowl.



Boll Weevil Type Casing Hanger



Canfield Bushing Type Casing Hanger



Slip Weld Type Casing Hanger

With interchangeable hangers, you can set your casing in any desired manner even to rotating while cementing. Not only different operations, but the entire sequence of operations are anticipated in the Gray Systems of Well Control.

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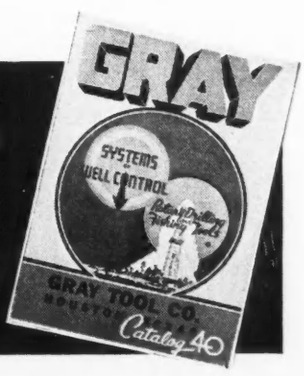
ASSURING:

★ **Smooth operation** with your particular methods.

★ **Continued economy** through your not having to repurchase for unexpected operations, and through provision for the repair of parts that have become worn through use.

★ **Safety** through keeping your well under complete mechanical control during and between all operations.

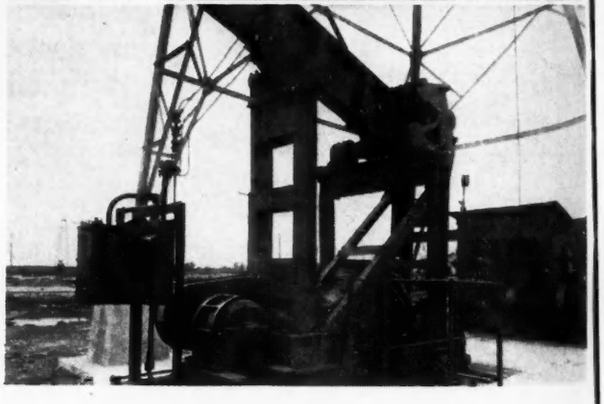
SEE THE GRAY SECTION IN THE 1940 COMPOSITE CATALOG



GRAY TOOL COMPANY

HOUSTON – TEXAS

WEST COAST DISTRIBUTORS
AGNER-MOREHOUSE, INC.
LOS ANGELES, CALIFORNIA



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PROFIT! BY USING *Purchased* ELECTRIC POWER

● *The Petroleum Electric Power Association is the outgrowth of a desire on the part of electric power companies to render greater service, through cooperative effort, to the Petroleum Industry.*

PETROLEUM ELECTRIC POWER ASSOCIATION

Gasoline Demand This Year Below Expectations

By L. J. LOGAN, Associate Editor

HAVING jumped to a new all-time peak of 93,985,000 barrels in the week ended February 17, increasingly excessive gasoline stocks have focused attention on prevailing demand for gasoline. And investigation has revealed that so far this year, the demand for the industry's principal product has failed to fulfill even the most conservative expectations.

Although the industry has been hoping to sell at least 3 to 5 per cent more gasoline in 1940 than in 1939, it actually has disposed of only about 1 percent more so far this year than in the corresponding period last year. The indicated total demand in January, 1940, was about 3 percent larger than that in January, 1939; but in February of this year the domestic and export markets have been absorbing about 3 percent less than they did in February of last year.

Figures breaking down the indicated current demand into domestic consumption and exports are not available, but known circumstances indicate the probability that both domestic and foreign sales of gasoline have lagged.

The extremely severe weather since the beginning of the year has retarded the operation of automobiles and trucks and therefore has curtailed domestic consumption of gasoline. And domestic demand may have been affected to a limited extent by the slowing down of industrial production and business activity since the beginning of the year, as gasoline sales necessarily are affected by changes in employment and consumer purchasing power.

Furthermore, no appreciable betterment of the relatively poor gasoline export situation has yet become apparent. Exports of gasoline from the United States were 11 percent smaller in 1939 than in 1938, having declined to 44,559,000 from 50,109,000 barrels. And in the closing months of the year, the foreign business was especially meager. The exports of gasoline were above 1938 levels in September, 1939, but subsequently were smaller than in 1938, as shown by accompanying figures.

Month	Barrels Gasoline Exported
September, 1938	3,528,000
September, 1939	4,232,000
Change	+19.9%
October, 1938	4,526,000
October, 1939	3,443,000
Change	—23.9%
November, 1938	3,698,000
November, 1939	2,560,000
Change	—30.8%
December, 1938	5,423,000
December, 1939	3,136,000
Change	—42.2%

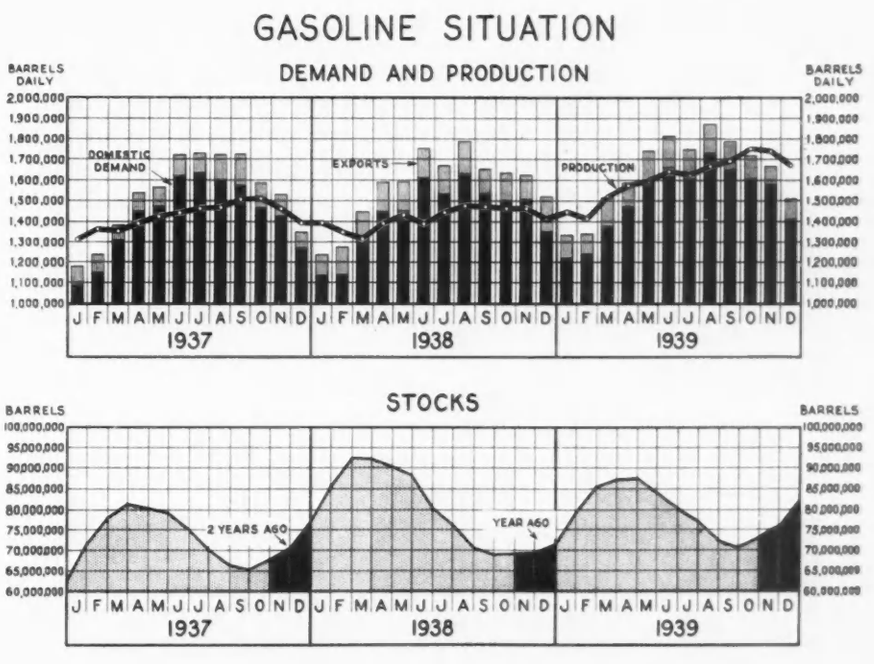
Figures given above on demand since the beginning of this year are subject to revision, but they closely indicate the trend in the gasoline picture, being based on the weekly statistics of the American Petroleum Institute on gasoline production and gasoline stocks.

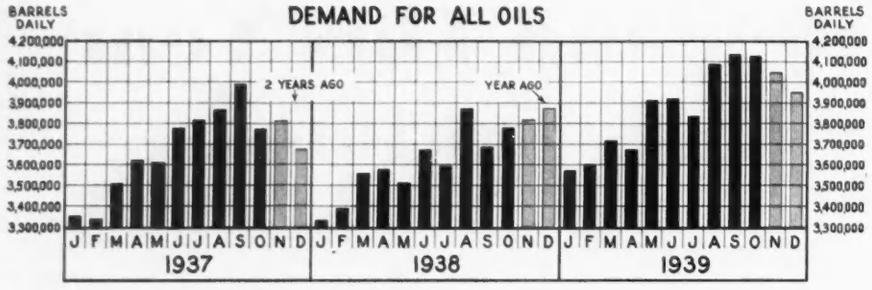
During January, gasoline production totaled approximately 50,340,000 barrels, and that quantity exceeded current market demand by about 7,596,000 barrels, as evidenced by an addition of that amount to storage. Indicated demand for the month was, therefore, approximately 42,744,000 barrels. That was 3.2 percent more than the demand of 41,405,000 barrels in January, 1939.

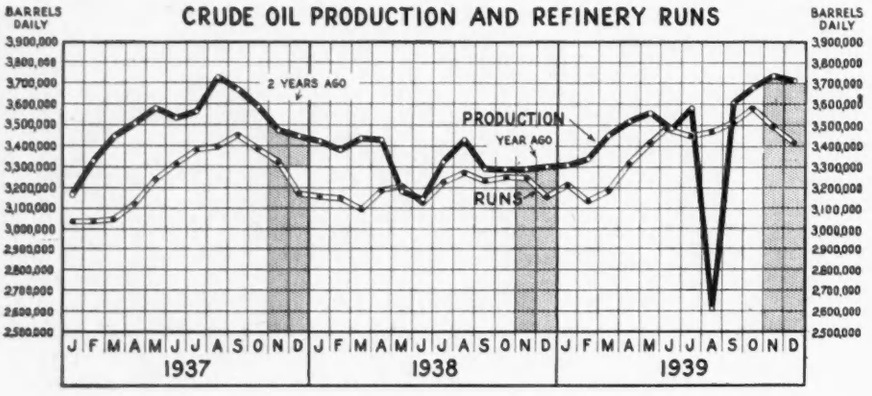
In its forecast for January,, 1940, the Bureau of Mines had estimated that demand would be 43,300,000 barrels, or 4.6 percent greater than that of January, 1939. Thus the actual demand of the initial month of this year was, apparently, about 556,000 barrels short of the bureau's forecast.

In the first 17 days of February, gasoline production amounted to about 27,398,000 barrels, and of that quantity, 5,259,000 barrels went to storage, indicating that demand, meanwhile, aggregated about 22,139,000 barrels. That represented an average daily demand of 1,302,300 barrels, and was 3 percent less than the average daily demand of 1,339,000 barrels in February, 1939.

In its forecast for February, 1940, the Bureau of Mines estimat-






CRUDE OIL PRODUCTION AND REFINERY RUNS
BARRELS DAILY
2 YEARS AGO
PRODUCTION
YEAR AGO
RUNS
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1937
1938
1939

ed that demand would be 1,383,000 barrels daily, or 3.2 percent larger than in February, 1939. Actual demand so far this month, therefore, has been about 81,000 barrels daily, or 6 percent, smaller than the expected daily average for the month.

Summarization of the above figures reveals that so far in 1940, demand for gasoline has been only about 1 percent larger than in the corresponding period of 1939. For the total demand in January and the first 17 days of February of this year was about 64,883,000 barrels, compared with approximately 64,168,000 barrels in the corresponding month and 17 days of last year.

Since the beginning of this year, the inventory of gasoline has been increased 13,000,000 barrels, the additions having averaged nearly 2,000,000 barrels a week or about 265,000 barrels daily. The latest weekly addition was 2,336,000 barrels and the one before that was 2,312,000 barrels.

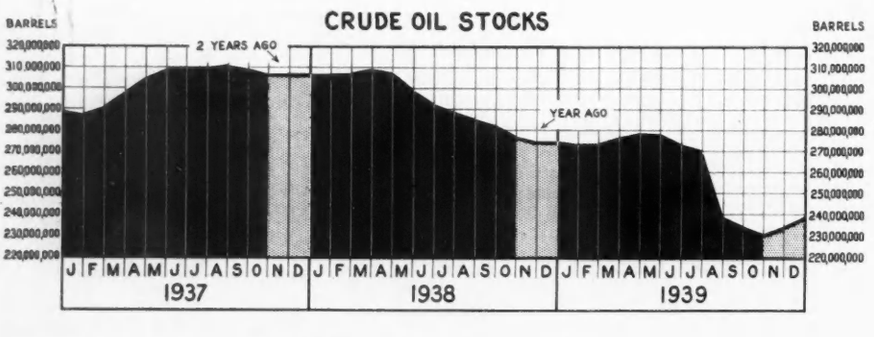
If additions should be continued at the same average rate as since the beginning of the year until March 31, when spring withdrawals from storage normally commence, the inventory would reach the unprecedented and unwieldy amount of 105,000,000 barrels. That would be about 23,000,000 barrels, or 28 percent, more than the 82,000,000 barrels regarded by economists as adequate working stocks as of March 31.

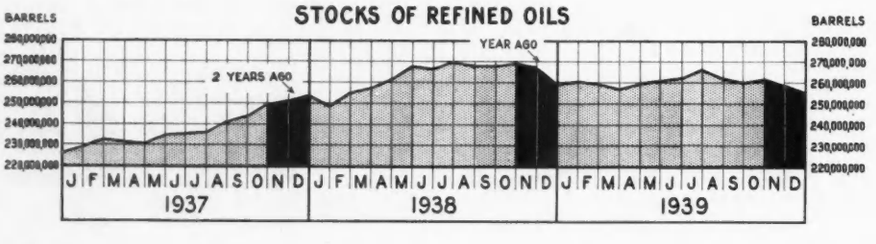
It is questionable, however, whether there are sufficient facilities for storing that great a quantity of gasoline; and there is a possibility, consequently, that the surplus may be held down somewhat by the physical limits of the storage tanks.

When they reached 93,000,000 barrels at the middle of March, 1938, the gasoline stocks may have filled all storage facilities then available, as no further additions occurred in the latter half of March or early April, although such additions would have been normal. However, additional tanks have been built in the past two years, and present facilities may be substantially larger than those of the spring of 1938.

The lagging of gasoline demand and over-building of gasoline stocks have marred the outlook for the oil industry, by threatening protracted weak markets for the principal petroleum product.

However, depressed gasoline





Changes from Year Ago in Stocks of Crude and Refined Oils in the United States

(Barrels of 42 U. S. Gallons)

LATEST WEEKLY DATA

(Sources: Crude stocks, Bureau of Mines; all other figures, American Petroleum Institute)

STOCKS OF:	Feb. 18, 1939	Feb. 17, 1940	Percent Change
Gasoline	83,075,000	93,985,000	+13.3
[1]Gas Oil & Distillate Fuels	30,206,000	25,876,000	−14.3
[1]Residual Fuel Oil	114,061,000	103,424,000	− 9.3
Crude Oil	[2]270,753,000	[3]239,510,000	−11.5

LATEST MONTHLY DATA

ITEM	Stocks at End of December 1938	1939	Percent Change
SUMMARY—			
Crude Petroleum:			
Refinable in U.S.	274,958,000	238,910,000	−13.1
Heavy in Calif.	16,467,000	13,330,000	−18.8
Natural Gasoline	4,830,000	4,421,000	− 8.5
Refined Products	259,665,000	256,249,000	− 1.3
Total, all oils	555,920,000	512,910,000	− 7.7
Days' supply:			
October basis	143	130	− 9.1
12 Mo. basis	152	132	−13.1
PRODUCTS—			
Gasoline:			
Finished	65,949,000	77,301,000	+20.6
Unfinished	5,731,000	5,564,000	− 2.9
Total	71,680,000	82,865,000	+15.7
Kerosene	7,799,000	7,576,000	− 2.9
[4]Gas Oil & Distillate Fuels	27,873,000	26,374,000	− 5.4
[4]Residual Fuel Oils	97,746,000	87,774,000	− 9.2
Lubricants	7,695,000	7,142,000	− 7.2
Wax (thousands of pounds)	129,340,000	75,648,000	−42.0
Coke (short tons)	707,500,000	666,000,000	− 5.8
Asphalt (short tons)	490,400,000	550,000,000	+12.2
Road Oil	680,000	702,000	+ 3.2
Miscellaneous	263,000	276,000	+ 4.9
Other Unfinished Oils	39,233,000	36,915,000	+ 5.9

[1] At refineries only, except in California.
[2] Stocks February 11, 1939.
[3] Stocks February 10, 1940.
[4] At refineries only.

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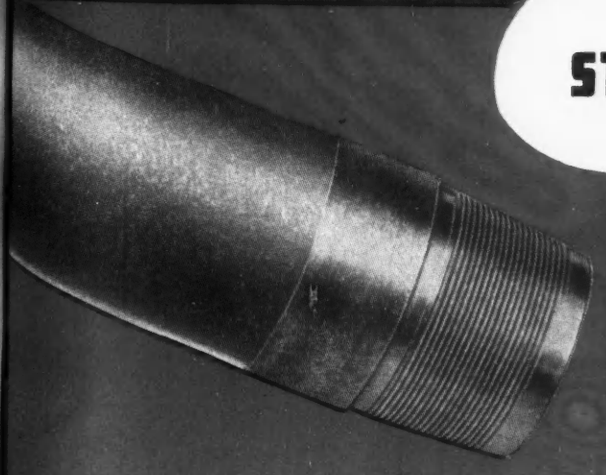

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prices are compensated to a considerable extent by good markets for most of the other refined products. And continued firmness is promised for those other oils.

The fuel oils, particularly, are in strong demand, as evidenced by the latest weekly statistics. Despite a sharp increase of 110,000 barrels daily in runs of crude to refinery stills, which was responsible for the large addition of gasoline to storage, production of heating oil was not great enough to meet current demand in the week ended February 17, and the industry was obliged to take 131,000 barrels more of gas oil and distillate fuel from the comparatively light storage. Stocks of those lighter fuel oils are about 16 percent smaller now than a year ago, whereas demand has been materially higher.

Residual fuel oils, used as fuel by ships, railroads, power plants, factories, and other industrial enterprises, also have continued in good demand, despite some slowing down of industrial production since the beginning of the year, as evidenced by withdrawals of those oils from storage every week, in the face of exceptionally large output at the refineries. The stocks of the heavy fuel oils are about 11 percent smaller than at this time last year, whereas demand has been substantially greater.

Lubricants remain in good demand, although recent weeks have brought some slackening of orders and inquiries, with the result that in some instances refiners have lowered their quotations slightly from the high levels to which they were advanced in the booming market of the past several months.

Presented herewith are tables embodying the latest available statistics on demand for the various refined products and on the inventories of those oils.

Total demand for all United States oils was 6.5 percent greater in 1939 than in 1938, but that gain was not maintained in December, when a gain of only 1.8 percent was registered.

Combined exports of crude oil and refined products were several millions of barrels smaller in 1939 than in 1938, as a slight increase in shipments of refined products was outweighed by a decrease in shipments of crude. For December the curtailment of exports was more pronounced, shipments of both crude and refined oils having been smaller than in December, 1938.

Total domestic demand for petroleum products was 8 percent larger in 1939 than in 1938, but the gain for December was only 4.9 percent.

Actual Demand for Gasoline Smaller Than Bureau of Mines Forecasts in Recent Months

(Barrels)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
December:				
December, 1939, forecast	112,210,000	43,600,000	4,600,000	48,200,000
December, 1938, actual	102,271,000	41,649,000	5,423,000	47,072,000
Change from year ago	+9.7%	+4.7%	—15.2%	+2.4%
January:				
January, 1940, forecast	110,660,000	39,500,000	3,800,000	43,300,000
January, 1939, actual	103,745,000	37,767,000	3,638,000	41,405,000
Change from year ago	+6.7%	+4.6%	+4.5%	+4.6%
February:				
February, 1940, forecast	102,340,000	37,300,000	2,800,000	40,100,000
February, 1939, actual	92,248,000	34,595,000	2,909,000	37,504,000
Change from year ago	+10.9%	+7.8%	—3.9%	+6.9%

Demand for Oil 6.5 Percent Larger in 1939 Than in 1938

Figures indicate barrels and are from Bureau of Mines

ITEM	DECEMBER			YEAR		
	1938	1939	Percent Change	1938	1939	Percent Change
SUMMARY						
Total Demand	120,229,000	122,415,000	+ 1.8	1,330,851,000	1,417,051,000	+ 6.5
Daily average	3,878,000	3,949,000	+ 1.8	3,646,000	3,882,000	+ 6.5
Exports:						
Crude petroleum	4,883,000	4,656,000	— 4.6	77,254,000	72,073,000	— 4.6
Refined products	11,237,000	8,557,000	— 23.8	116,474,000	116,909,000	+ 0.4
Domestic Demand:						
Motor fuel	41,742,000	43,694,000	+ 4.7	523,003,000	552,557,000	+ 5.5
Kerosene	6,813,000	6,613,000	— 2.9	56,360,000	60,501,000	+ 7.3
Gas oil and distillate fuels	15,694,000	16,280,000	+ 3.6	117,449,000	131,935,000	+ 12.3
Residual fuel oils	29,746,000	30,722,000	+ 3.3	291,833,000	321,228,000	+ 10.3
Lubricants	1,831,000	1,825,000	— 0.3	21,233,000	23,613,000	+ 11.2
Wax	61,000	157,000	+157.3	995,000	1,162,000	+ 16.8
Coke	506,000	618,000	+ 22.1	5,589,000	7,110,000	+ 27.2
Asphalt	1,157,000	1,414,000	+ 22.2	24,155,000	26,879,000	+ 10.1
Road oil	148,000	71,000	— 52.0	7,847,000	7,846,000	— 0.1
Still gas	5,223,000	5,761,000	+ 10.3	65,890,000	66,979,000	+ 1.6
Miscellaneous	145,000	206,000	+ 42.1	1,776,000	2,223,000	+ 25.2
Losses	1,043,000	1,841,000	+ 76.5	20,993,000	26,036,000	+ 24.2
Total domestic demand	104,109,000	109,202,000	+ 4.9	1,137,123,000	1,228,069,000	+ 8.0
Daily average	3,358,000	3,523,000	+ 4.9	3,115,000	3,365,000	+ 8.0
TOTAL DEMAND FOR PRODUCTS						
Motor Fuel:						
Domestic	41,742,000	43,694,000	+ 4.7	523,003,000	552,557,000	+ 5.5
Exports	5,423,000	3,136,000	— 42.2	50,109,000	44,559,000	— 11.1
Total	47,165,000	46,830,000	— 0.7	573,112,000	597,116,000	+ 4.5
Aviation Gasoline:						
Domestic	*	292,000	.....	*	*	.....
Exports	*	372,000	.....	*	4,234,000	.....
Total	.....	.....	.....	.....	.....	.....
Kerosene:						
Domestic	6,813,000	6,613,000	— 2.9	56,360,000	60,501,000	+ 7.3
Exports	803,000	652,000	— 18.8	7,504,000	8,243,000	+ 9.8
Total	7,616,000	7,265,000	— 4.6	63,864,000	68,744,000	+ 7.6
Gas Oil and Distillate Fuels:						
Domestic	15,694,000	16,280,000	+ 3.7	117,449,000	131,935,000	+ 12.3
Exports	2,413,000	1,998,000	— 17.2	29,641,000	32,021,000	+ 8.0
Total	18,107,000	18,278,000	+ 0.9	147,090,000	163,956,000	+ 11.5
Residual Fuel Oils:						
Domestic	29,746,000	30,722,000	+ 3.3	291,833,000	321,228,000	+ 10.0
Exports	1,737,000	1,320,000	— 24.0	17,920,000	17,490,000	— 2.4
Total	31,483,000	32,042,000	+ 1.7	309,753,000	338,718,000	+ 9.3
Lubricants:						
Domestic	1,831,000	1,825,000	— 0.3	21,233,000	23,613,000	+ 11.2
Exports	676,000	1,310,000	+ 93.7	9,417,000	11,981,000	+ 27.2
Total	2,507,000	3,135,000	+ 21.5	30,650,000	35,594,000	+ 16.1
Wax (thousands of pounds):						
Domestic	17,063,000	43,971,000	+157.7	278,532,000	325,460,000	+ 16.8
Exports	22,311,000	14,603,000	— 34.5	201,447,000	232,664,000	+ 15.5
Total	39,374,000	58,574,000	+ 48.7	479,979,000	558,124,000	+ 16.3
Coke:						
Domestic	101,100,000	123,600,000	+ 22.2	1,117,700,000	1,422,100,000	+ 27.23
Exports	11,600,000	12,600,000	+ 8.6	155,600,000	285,800,000	+ 8.4
Total	112,700,000	136,200,000	+ 21.4	1,273,300,000	1,707,900,000	+ 34.0
Asphalt (short tons):						
Domestic	210,300,000	257,100,000	+ 22.4	4,391,700,000	4,887,000,000	+ 11.3
Exports	5,400,000	2,300,000	— 57.4	49,900,000	42,600,000	— 14.6
Total	215,700,000	259,400,000	+ 20.4	4,441,600,000	4,929,600,000	+ 11.0
Road Oil:						
Domestic	148,000	71,000	— 52.0	7,847,000	7,846,000	— 0.1
Miscellaneous:						
Domestic	145,000	206,000	+ 42.0	1,776,000	2,223,000	+ 25.1
Exports	17,000	14,000	— 17.6	112,000	123,000	+ 9.8
Total	162,000	220,000	+ 35.8	1,888,000	2,346,000	+ 24.4

* Figures not available.

Lack of Coordination

[*Continued from page 12*]

Inasmuch as the law of supply and demand is supposed to act as a balance wheel on industry operating on a free economy, it might be expected that over a period of four years, it would have functioned. There are, however, a number of reasons why it has not. In the first place the domestic consumption of gasoline is not affected to any considerable extent by substantial fluctuations in price. Secondly, the amount of heating oils consumed in domestic burners is not affected (at least within the limits that have existed up to the present time) by substantial fluctuations in prices. Thirdly, it has been the practice in the industry up to the present time to guarantee top prices for distillate fuel oils for a year in advance. Fourthly, most of the companies in the industry have adopted a system of cost accounting which results in placing of lower costs on secondary products than on gasoline.

To explore all of these causes and correlate them with the demands for other fuels is an extensive study which I shall not attempt here. Rather I shall state the conclusions arrived at after an extensive analysis of these various causes.

Although from time to time a number of suggestions have been made with respect to this subject, it is unlikely that any one nostrum can be made to bring about the desired results; rather a combination of a number of remedies would seem in order.

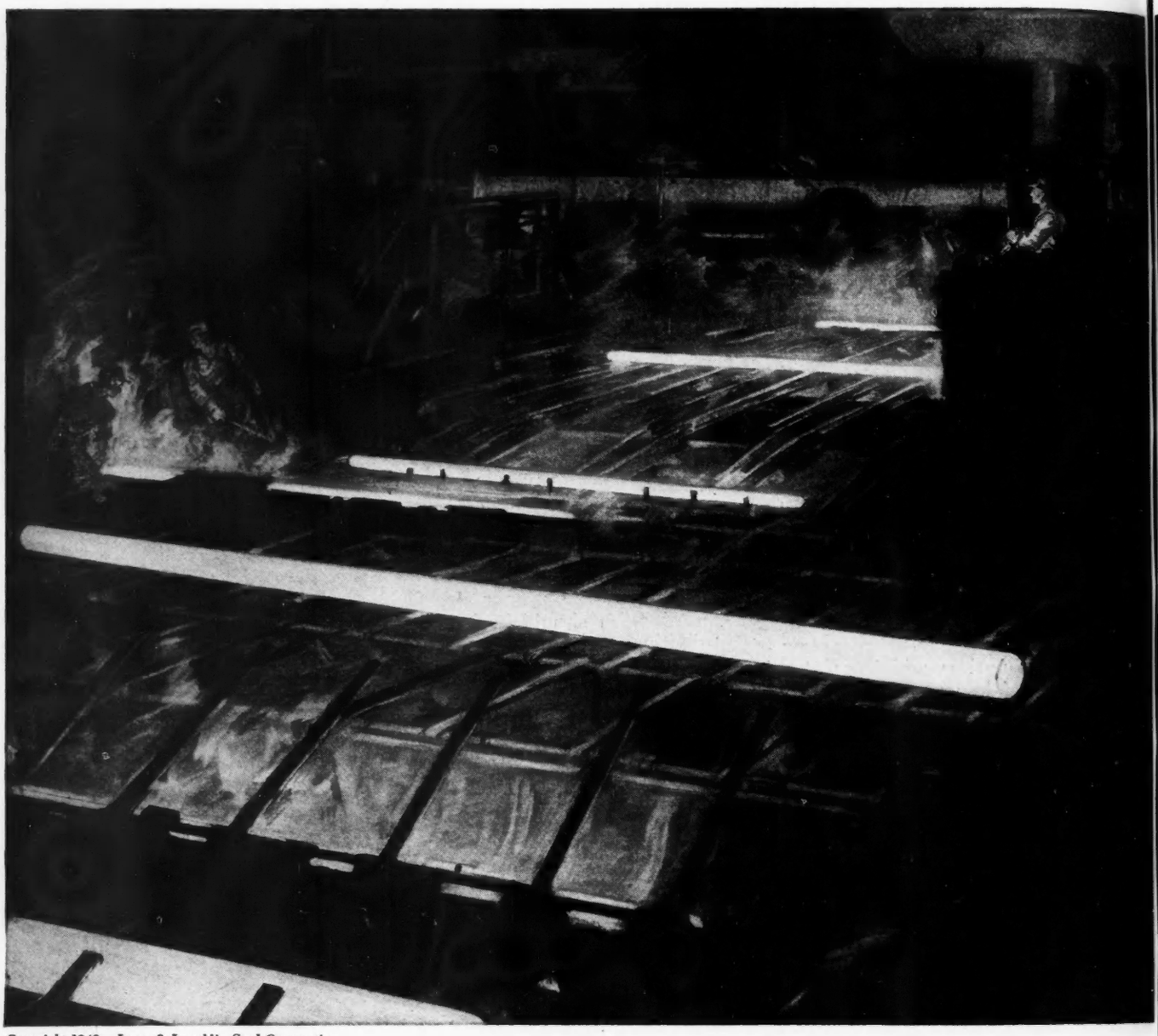
The oil industry has been built and geared to supply gasoline. For the United States in total, 45 percent of the crude oil run to refineries comes out as gasoline and to this is added a quantity of natural gasoline so that the relationship between the total output and the crude intake is about 50 percent; in some districts, East of California, it goes as high as 70 percent. It seems unnecessary to elaborate on the simple statement that with all products coming from a common supply, namely crude oil, the required production of the principal product should control the output of secondary products.

The problem then is to bring about the necessary balance in the consumption of the two products within the limitation just imposed and it is not too far fetched to hope that this can be accomplished. First, it would appear necessary that the present restraints on the law of supply and demand should be removed. In other words, the propriety of top price contracts might well be examined with a view to permitting the law of supply and demand to function and refiners should adopt a method of costing which results in a more equitable distribution of costs as between gasoline and distillate fuel oils. After all, these two products came from the same crude oil, were discovered by the same geologists, were drilled for by the same driller, were transported through the same pipe line, and were processed through the same refinery.

Secondly, the proper degree of coordination should be had in the individual companies as between the two sales organizations, the one handling gasoline, and the other handling distillate fuel oil. Returning to the basic premise that the major product should control refinery throughputs, runs to stills should be maintained at a level sufficient to meet the gasoline requirements. The refining department should calculate the amount of distillate fuel oil that can be made conveniently and economically along with the required gasoline production and the fuel oil sales department should then be instructed to sell the available output of distillate fuels in the most attractive market.

Thirdly, insofar as practicable refining schedules should be budgeted on a year-round basis, and the required supplies of distillate fuel oil so far as they can be foreseen should be accumulated over the year rather than waiting until the fourth quarter to discover a shortage.

Fourthly, any further expansion in market for the heavier grades of distillate fuel should be discouraged; to permit the realization of a larger yield of the lighter distillates required for domestic heating.



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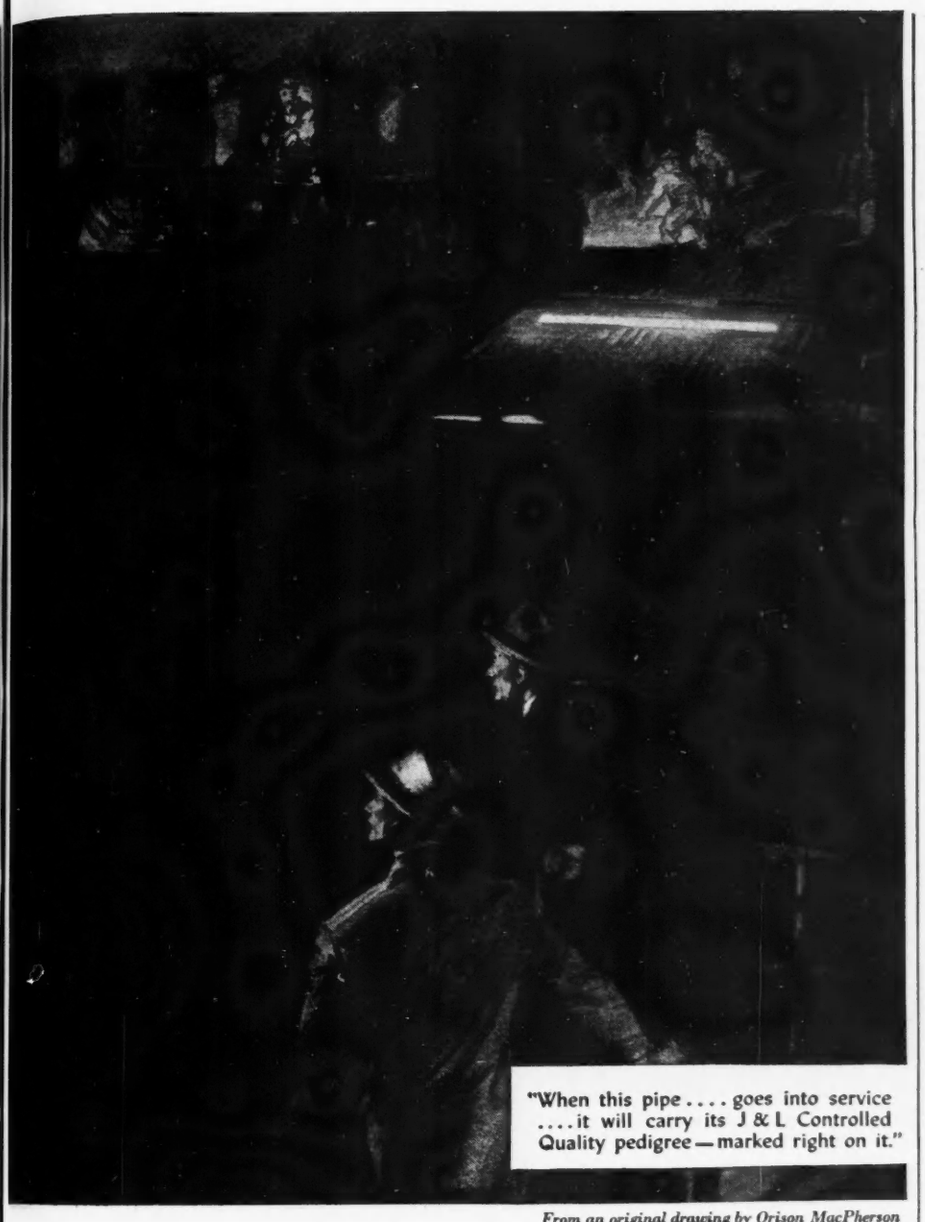

From an original drawing by Orison MacPherson

sures in addition to its own weight hanging in a well as deep as three miles.

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Sea-going oil wells, two miles deep, are drilled from barges in 30 feet of water, in Texas and Louisiana. In California, Texas, and Venezuela, derricks are rigged over the ocean, the Gulf of Mexico, and many lakes. With the new practice of "directional drilling," operators set up derricks on land and reach out for oil beneath water or other natural barriers. Holes have been "directed" a lateral distance of 3,200 feet in 5,000 feet of drilling.

You walk on petroleum in the jute backing of carpeting and rugs treated with water-oil mixtures during processing.

Home-made earthquakes, created by deep shot-holes and dynamite, are a modern seismographic method of finding oil reserves by recording reflections of the shot vibrations from rock structures down 20,000 or 25,000 feet. The simple means used by the early oil pioneers to "locate" wells—by "doodle bugs" (valueless pseudo-scientific gadgets), or peach twig divining rods—have given way to modern science. Today geophysical prospecting is the greatest single factor in finding deep oil reserves. Petroleum geologists predict new advancements in prospecting methods will discover new supplies.

$300,000 for three miles was the cost of the world's deepest well drilled in California. Average wells cost from $40,000 to $100,000—and many are "dry holes."

Tomorrow's Wildcat starts at today's depth record, oil men say. Four-mile depths await only location of sufficient reserves and demonstration such costly wells will pay.

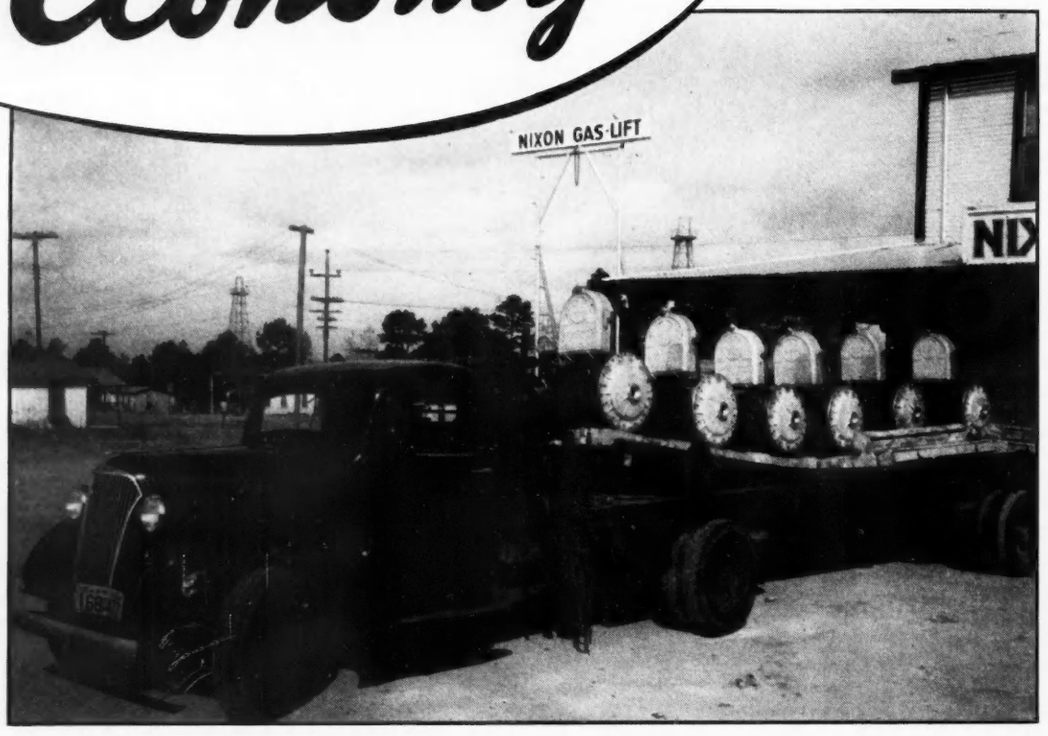
Oil big steel user. More than 1,250,000 gross tons of steel products were bought by the oil industry in one year (1937)—which provided employment enough to keep about 40,000 steel workers on the job 52 full weeks. Other industries share in oil's $1,000,000,000 a year purchases of equipment, supplies, services—tin cans to shovels, sulphuric acid to railroad cars, paper clips to ocean-going tankers.

By-products from petroleum include resins, solvents, and alcohols.

A million safe man-hours is no longer a rarity in operation of oil and gas leases. Safety has been improved 85% in 20 years.

How old is oil? Before the birth of Christ, townsfolk of Agrigentum, Sicily, burned petroleum in make-shift lamps. Egyptian mummies were preserved in asphalt from a spring on the Island of Zanté. Plutarch describes a lake of blazing petroleum near Ecbatana, in Persia. An oil fountain in the Ionian Islands, west of Greece, has been bubbling for 20 centuries.

Proration forces *Economy*



Prorated production, being the order of the day, forces every oil operator to look for the most economical means of producing his wells.

And above is pictured how one of many operators start economizing, by hauling six Nixon Gas-Lift units on a light truck. These units will be installed on six wells that have ceased flowing and now require artificial means of fluid lifting.

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Industry Representatives Denounce Federal Control

Representatives of all organized groups in the oil industry lined up before the Cole subcommittee of the House Interstate and Foreign Commerce Committee last week to oppose the administration's production control bill as Representative William P. Cole, Jr., of Maryland, chairman of the group, denied reports that the bill was to be killed. He asked inquiring newspapermen why, if no action was to be taken, the subcommittee should continue to take testimony.

Chairman Cole indicated strongly his belief that the measure would be reported out for House action, but in other congressional quarters the suggestion continued to be made that the states and the industry would be given an opportunity to show they can deal with the situation before legislation is enacted.

Because of debate on the extension of the Reciprocal Tariff Act which was going on in the House during the hearings, the number of committee members present varied from two to five, with Representative Wolverton (Rep., N. J.) making his first appearance Tuesday when representatives of the Interstate Oil Compact Commission, whom he hoped to question about the August shutdown, were due to testify.

Informed members of Congress answered Chairman Cole's question as to the continued taking of testimony in the face of a probable lack of action on the legislation by pointing out that the subcommittee is making a record which will support the predicted report that waste has been proven to exist and the recommendation that an opportunity be given for a state program to be worked out, but which at the same time will form the basis for renewed consideration of the measure a year or two hence if it then appears that the situation has not been adequately taken care of.

There were also suggestions, however, that the subcommittee might rewrite the measure so as to make it apply only to states having no regulation and providing that where satisfactory state regulatory measures were in effect the imposition of federal control would be suspended. This was seen as an effort to force Illinois and California quickly into line.

Because of the mass of evidence presented by the witnesses for the industry, the subcommittee was unable to conclude the hearings within the week allotted to them and consented to continue to take testimony during the first three days of this week.

Leading off for the industry, George A. Hill, Jr., president of the Houston Oil Company, Houston, unleashed a scathing attack on the measure, which he asserted is "merely the preliminary step" in an administration program to take over the petroleum industry.

The legislation, Hill asserted, cannot be disassociated from the new conception of the functions of the federal government "advocated by that school of political thought that seeks to substitute a system of regimented industry and managed economy for the American system of individual initiative and free enterprise."

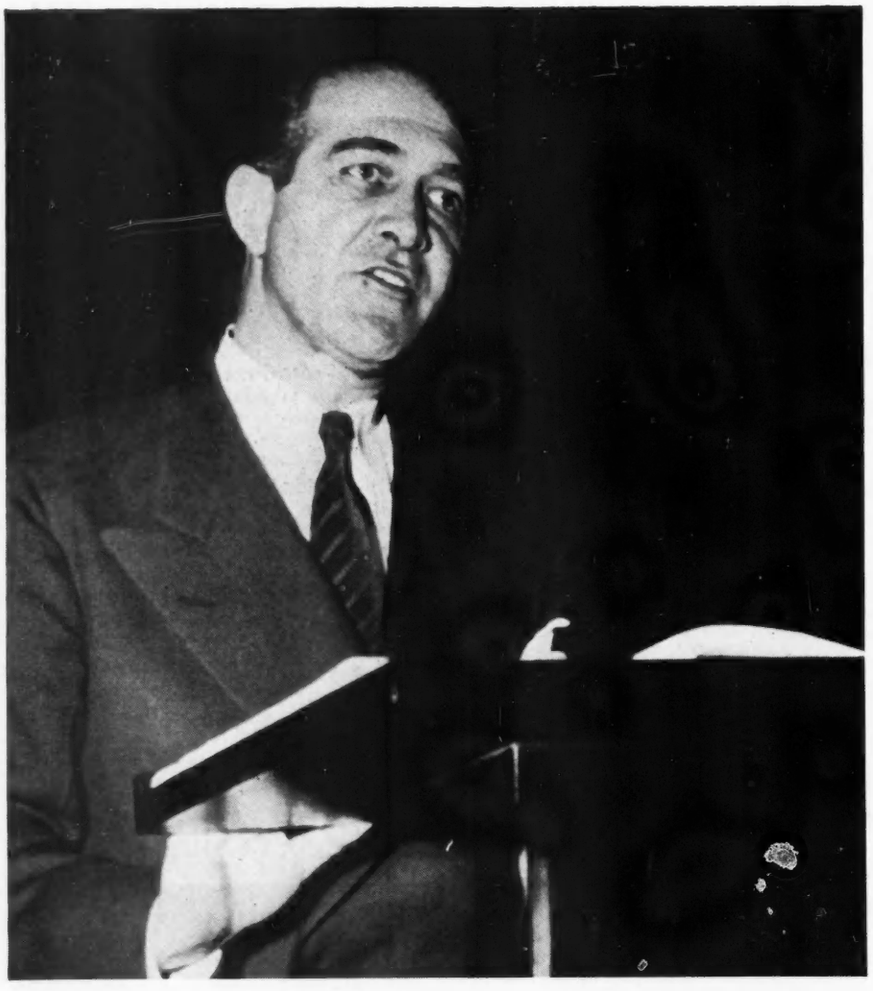
"The advocates of this particular legislation have not always been entirely frank in disclosing the part of this particular item of legislation in the new social and economic program," he charged. "This legislation is designed to substitute federal government control and regulation of petroleum for state regulation and control."

"Government Authorship"

Hill testified that the bill is not advocated by the industry—which has repudiated it—or by the oil-producing states—which are opposing it, but had its genesis and authorship "in a department of the government now exercising certain economic and advisory functions for the industry and such department of the federal government is itself seeking the new comprehensive and authoritarian powers conferred by this legislation."

The "impact of war, the imminence of war, or the fear of war" are the cause or excuse for the effort to secure

GEORGE A. HILL, JR.—"It is only a preliminary step."



JACK BLALOCK—"The federal government does not have the power under the constitution."

control, he alleged, pointing out to the subcommittee the results of similar aims of government in Russia, Italy and Germany.

Outlining the efforts of government agencies to secure control of natural resource industries and the arguments for such control in the reports of the National Resources Planning Board, Hill declared "the Cole bill is merely 'preliminary regulation.'

"Anticipating threatened price increases and a national emergency and therefore certain 'federal intervention,' the argument is that the states and the industry should admit the inevitable and submit to a light anaesthetic in the form of preliminary regulation before the severance of the jugular vein comes, with a complete system of federal control and regulation," he said.

"Compulsion"

"To begin with, the federal scheme plainly recognizes that it would substitute compulsion for private bargaining with both the land owners and oil operators, which presupposes some all-wise paramount authority to design the pooling agreement to which the operators and land owners shall be subjected.

"The violation done to both the federal and state constitutions is waved aside with a sample observation that 'such an arrangement undoubtedly would require state legislation.' It presumes that countless existing lease contracts of every kind and description made by hundreds of thousands of American citizens under their constitutional right of contract in relation to their private property can be nullified by an act of the legislature substituting 'new lease forms to replace present lease obligations.'"

All of the arguments of supporters of the legislation, Hill asserted, "presuppose the ability in advance of development to accurately delineate subsurface conditions and to compel the owners of property to pool their various interests."

"Throughout the whole discussion there is an adroit avoidance of any reference to the financial obligations involved in such compulsory partnership," he charged. "There is no mention of whose duty it shall be to furnish the money, not only for the initial exploration and development, but for succeeding development costs. There is no effort to describe the method of determining who shall be the operating party. There is no attempt to describe the procedure by which the countless executive and operating decisions involved in future operations shall be resolved, and whether or not that compulsion which seizes ones land for the purposes of unitization shall likewise subject him involuntarily to debt, the incurring of which he has no part in, and the increase of which he cannot prevent. There is no effort to describe the land owner's right to resist ejection from his home if the operator of the unit desires to use it for storage facilities, a recycling plant, or some other surface use."

Summing up, the witness declared: One, the bill is merely preliminary legislation; two, prevention of physical waste is a purely preliminary approach; three, prevention of uneconomic uses is the real objective, which will effectuate complete economic control over uses, products, refining processes, domestic production, foreign importations, priorities; four, modification (and, in effect, practical expropriation) of property rights in petroleum and gas deposits in advocated and planned and with no purpose or intention of seeking constitutional amendments to legalize the scheme; and, five, federal control and ownership are in early contemplation and in the Cole bill this scheme is designed to accomplish an easier advent of the general plan.

Would Slow Exploration

Dissecting the bill, section by section, the witness denied that the governmental control contemplated therein is superior to private management or that the proposed federal regulation is superior to state regulation.

"Only under a system of free enterprise can the industry discover and maintain adequate resources for use of the nation at reasonable prices," Hill warned. "A federal straight-jacket ostensibly to achieve greater efficiency would slow down exploration, and soon we would witness declining reserves."

Questioned at length by Chairman Cole as to the Illinois situation, Hill insisted that the state would "fall in line" in the near future and asserted that experience would provide the necessary education in the necessity for conservation legislation.

Despite the witness' argument that the federal government had no right to undertake control of the industry, the chairman, declaring that he, too, is a "state's rights man," commented that, in view of the conditions in some of the states "I think something should be done, but I don't know how far we should go."

Expropriation Cited

Other members of the subcommittee also discussed the need for the legislation with Hill, who finally pointed out that the War and Navy departments have given little support to the Ickes drive for federal control and suggested that "if the Army and Navy were really concerned they would not sit by in apparent indifference to the expropriation of our foreign holdings."

"The Interior Department is in a lather over what is going to happen to the Army and Navy," he said, referring to the Mexican situation, "but the State Department is not similarly concerned over what is happening in Mexico."

Hardwicke for Bar

Tracing the development and operation of state conservation laws from the inception of the movement to the present time, Robert E. Hardwicke, Fort Worth attorney and chairman of the section of mineral law of the American Bar Association, told the subcommittee that the provisions of the Cole

bill do "not come anywhere near being as good" as the current laws of most of the oil states.

Quoting from publications of 75 to 80 years ago, Hardwicke cited complaints of overproduction in 1861 and of low prices in 1862 to show that the question of conservation and waste is not a post-war development but, rather, a problem with which the industry has sought to cope from its very inception.

The oil industry, he said, still remembers the attitude taken by the Interior Department during the period of the NRA code.

"This is no place to discuss the history of federal regulation under the petroleum code," he went on. "Experiences under operation of the petroleum code did, however, bring about rather decided opinions on the part of the oil man with respect to what would likely happen should the federal government again exercise control over the oil industry. Whether or not these opinions are justified is immaterial. They explain the rather violent opposition of most oil men to the proposed Cole bill or anything like it.

Faulty Administration

"First, is the belief that the officials selected by the federal government were without experience in the oil business. The oil man, having been subjected to regulation by federal officials whom he thought had only a superficial knowledge of the problems of the industry, is somewhat reluctant to urge federal regulation again.

"It is also the belief of the ordinary oil man that the boards and officials of the federal government in the days of the petroleum code were autocratic and arbitrary. Here again, it is immaterial what are the facts. The point is, the oil man thinks that the administrative officers under any federal-control setup would likely be autocratic and arbitrary.

"Actual experience under the petroleum code indicated the expense and other natural complications incident to regulation from Washington. The ordinary oil man reached the conclusion that, after all, there were substantial reasons for our form of government which proceeds on the theory that, as far as possible, local matters ought to be handled by the states, even if greater efficiency were theoretically possible should power be centralized in Washington."

Hardwicke questioned claims that the legislation provides merely for "cooperation" with the states and challenged the contention that under federal control unit operation of fields could be brought about or other steps taken which are promised in the measure. Before abandoning the present system of state regulation, he contended, the inefficiency of state control should be definitely demonstrated and the extent of the resulting waste "proved to be enormous."

Specifically, the witness asserted, federal regulation of all states is not justified by the absence of control in a few of the states. Not only is it not to be assumed that control measures will not be adopted in states now having no regulation, he said, but the problem of a few states is not the proper basis for a control which would apply equally to states having the most modern conservation policies.

RALPH J. SCHILTHIUS—"There has been much misconception of efficiency of production methods."

"If the states are not doing a good job of regulation, the fault can be traced primarily to the lack of ability and integrity of the state officials rather than to the provisions of the statutes," he declared. "Is there any guarantee that federal officials would on the whole be a higher type than the present state officials?

"The states and the oil industry have done a good job of eliminating the waste of oil and gas," Hardwicke concluded. "The federal government in cooperation has rendered great assistance, which has been welcomed. Existing evils should be of great magnitude and it should clearly appear that the states and the industry cannot or will not apply known effective remedies, and that such can be applied by the federal government, before undertaking to change our traditional division of federal-state powers by making the federal government supreme in local matters."

Illness of Ernest O. Thompson of the Texas Railroad Commission and Governor Hiram M. Dow of New Mexico, slated to appear on behalf of the Interstate Oil Compact Commission February 20, necessitated postponement of the questioning of those officials until a later date, but a formal statement of the history and activities of the commission, prepared by the New Mexico governor, was presented by Andrew F. Schoeppel, chairman of the Kansas Corporation Commission. Jack Blalock, Houston attorney, argued the unconstitutionality of the Cole bill.

Dow's Statement

The interstate oil compact is operating on educational, cooperative lines and is making no effort to achieve regimentation of the oil industry, it was declared in Governor Dow's statement.

The commission, he said, has no "must" powers and does not operate along military lines, and in most cases has refrained from passing any specific resolutions as to what the states must do in order to obtain true conservation.

"Not only has the compact had the well-wishes of the President, but it has at various times met with the approval of the Secretary of the Interior," he pointed out, quoting reports of Secretary Ickes to Secretary of State Cordell Hull approving extension of the agreement.

"The efforts of the Interstate Oil Compact Commission have at all times been devoted to true conservation," Schoeppel testified on behalf of the governor. "A review of the modern advancement in the conservation laws of the states will disclose the influence of the educational work of the compact commission."

The commission has not abandoned

hope that California will adopt the legislation necessary for participation in the pact, he told the subcommittee, disclosing that Governor Leon C. Phillips of Oklahoma, chairman of the commission, will make another trip to the coast next month to renew activity for an adequate conservation bill.

Illinois Will "Fall in Line"

Illinois also is expected eventually to fall into line, he continued, pointing out that until 1938, when new fields were discovered, it had been classed as a stripper well state.

"With the coming of flush production in Illinois the same opposition to adequate conservation laws had developed which had developed theretofore in all the other states during preconservation days before the molding of public opinion forced the necessity of conservation on the majority of the operators," he testified. "Forces for better regulation have been constantly at work in Illinois and the compact is lending every assistance, with the conviction that Illinois will soon pass through the turmoil period and emerge to a true conservation state in the near future."

Efforts of Representative Wolverton to elicit the details of the August, 1939, meeting of the compact commission at Oklahoma City previous to the general shutdown of production drew from Schoeppel the admission that he was not fully acquainted with the details and the suggestion that the committee await the recovery of Thompson and Governor Dow. It was agreed by Chairman Cole that probably no one is more familiar with the operations of the commission than the Texas member and that it would be a waste of time to attempt to secure intimate details from other compact officials.

Arguing against the constitutionality of the legislation, Blalock denied that Congress has authority to control the production of oil within the boundaries of the several states under its powers either to provide for the national defense or to regulate interstate and foreign commerce.

"Production Regulation for States"

"The exclusive power to regulate the production of crude petroleum rests in the sovereign state itself through a reasonable exercise of its police powers," he declared.

Blalock submitted an interpretation of the Constitution that the authority of Congress to provide for the national defense is limited to the imposition and collection of taxes and that interpretation, he said, has been adopted by the courts in numerous decisions.

"Does this bill provide for the laying and collection of taxes, duties, imposts and excises for the purpose of providing funds for the common defense?" he asked. "It does not. The bill in no manner brings into operation the taxing power of Congress; on the contrary, it just boldly purports to regulate the production of petroleum. Testing the bill, therefore, by the language of Section 8 (1), as interpreted and defined by the framers of the Constitution itself and by our United States courts, we must conclude that it cannot be sustained under the 'national defense' theory. Congress does not have the power to enact the provisions contained in H.R. 7372 under authority of Section 8(1), Article I, of the Constitution of the United States."

Similarly, he argued, while the Constitution delegates to Congress the right to regulate interstate commerce, the bringing of oil out of the ground is neither "commerce" nor "interstate commerce" and the federal government is without authority until that oil begins to move from the point where it was produced. "There is no language granting the right to control or regulate production," Blalock pointed out.

First answer to charges of the Interior Department that waste exists in practically all of the producing states was made by Ralph J. Schilthuis, engineer of the Humble Oil & Refining Company, Houston.

Charges of Waste "Overdrawn"

Discussing conditions in Texas, Louisiana and New Mexico, Schilthuis declared that the department's charges were overdrawn, that in some instances the waste has been eliminated and in others it is not avoidable.

"The problem of gas production, handling and utilization is an intricate, complicated and difficult one," he explained. "Gas cannot be successfully stored above ground to await markets; moreover, in the areas here under consideration, the available markets are already being supplied. In many instances, the gas produced is not in sufficient volume or richness to justify the construction of gasoline extraction plants or other facilities for handling the gas for any purpose. Furthermore, in most cases where gas is produced with oil, its return to the indigenous reservoirs is neither economically feasible nor sound from the standpoint of obtaining the most efficient recovery of the oil.

"It will be seen that while it may be theoretically possible to prevent the venting to the air of all gas produced with oil, to do so is not practical economically nor feasible from the standpoint of efficiency and oil conservation," Schilthuis added. "Furthermore, any attempt to bring this about would result in the closing down of many oil fields and in the reduction of oil production to only a fraction of the amount required to meet present consumptive needs."

The first of a series of engineer witnesses testifying as to the efficiency of production operations in various areas, Schilthuis gave a technical explanation of conditions in the three Southwestern states and the steps that have been taken to reduce waste and secure conservation.

He pointed out that there has been much misconception in the past concerning the efficiency of production methods normally used by the industry, which it was charged left a large part of the oil unrecovered, and from the additional knowledge of underground conditions secured in recent years "it is now known that even with the comparatively wasteful wide-open conditions under which fields were produced in the past, a considerably greater percentage of the oil was actually recovered than was previously commonly thought." The actual ultimate waste, he predicted, will be found to be but a small fraction of the original recoverable reserves or of those now remaining.

Declaring that fear of government regulations has permeated all industry and is retarding development, former Congressman Paul R. Greever, of Cody, Wyoming, representing the Rocky Mountain Oil & Gas Association, told the subcommittee that the Interior Department should achieve real conservation in the lands under its control before it attempts to extend its authority over state and private oil lands.

"No one can present facts and figures enough to make me believe that a government agency can control the oil industry or run it with half the efficiency of the operators with long years of experience behind them, no matter how sincere, how hard-working or how scientific," he asserted.

"Every field is a separate problem, every well is a separate problem, and how it is or can be assumed that government regulation is the answer is beyond me. This is the province of the state, and many states have comprehensive laws all of which are functioning properly today."

Greever particularly attacked Section 15 of the Cole bill which, he said, makes it so difficult and expensive to undertake court actions that producers of moderate means will be unable to secure relief from any improper orders or regulations of the commissioner who, he charged, would be a virtual dictator" over the industry.

Present Laws Adequate

Wyoming producers, he said, "feel that the industry being subject already to sufficient restriction under state and federal laws and also subject to so many taxes of various kinds that the control which would be given under this bill would be to add not only additional expenses and additional taxes, but additional restriction to an already over-burdened industry."

Fields developed more than 10 years ago could probably have given greater recovery had they been operated conservatively, but those fields would not now be aided by federal control and more recently opened fields are being developed with greater scientific efficiency, it was declared by C. V. Millikan, chief engineer of the Amerada Petroleum Corporation, Tulsa.

Discussing conditions in the Rocky Mountain area, Millikan testified that operators in Montana, Colorado and Wyoming are following such conservation practices as are warranted, while in Kansas, Oklahoma and Arkansas adequate conservation laws are being applied.

"The petroleum industry has not merely submitted to conservation legislation and rules and regulations of constituted conservation authorities," he said. "It has actively supported them. Its technologists have studied reservoirs and reactions in reservoirs to withdrawal of fluids to provide a guide to producing practices. It has developed special practices of completing and repairing wells, such as gun perforating, squeeze cementing and chemical plugging, to obtain and maintain better control of production from the reservoir. It has given its technologists time and its field operation experience to conservation authorities to encourage and support them in making more strict and progressive conservation rules and regulations. It has similarly contributed

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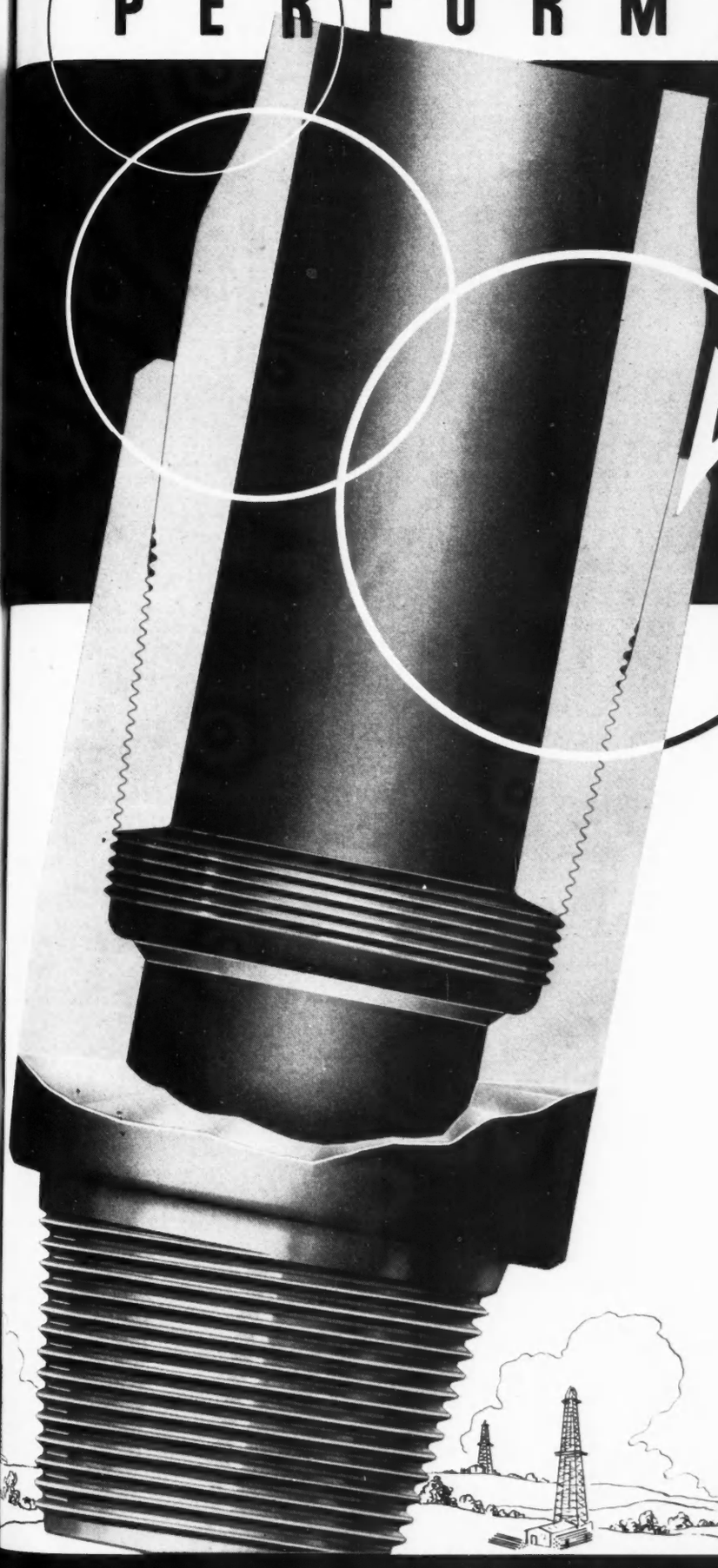

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"Mistakes have been made by the petroleum industry in information submitted to conservation authorities. Mistakes have been made by conservation authorities by issuing rules more strict than data, experience or law would support, or delaying a conservation rule too long in order to obtain more data or experience to justify the order. More such mistakes will be made. The nearer the conservation authority is to the industry, the more frequently it can have contact with the problems of the industry, and the more intelligently it can administer its conservation requirements and encourage the continued rapid progress in conservation practices by the industry."

A conservation law, in order to accomplish its purpose, he warned, "must have the support of the public and the industry and have adequate and competent administration."

Tanker exports of California crude oil and refined products to Japan last year dropped 10 percent from 1938 to 29,881,000 barrels, but there was an additional 1,200,000 barrels shipped from the Gulf and 170,000 barrels from Mexico and 200,000 barrels from Ecuador were carried in tankers fueling at Los Angeles for the trip across the Pacific, it was testified by Robert E. Allen, Los Angeles, representing the California Oil & Gas Association.

California exports last year, he said, included 16,935,000 barrels of crude oil, 2,119,000 barrels of gasoline, 9,962,000 barrels of fuel oils and 865,000 barrels of other products.

California Plan Cooperative

Reviewing the history of conservation in California, Allen declared that "regulation of oil production in California is regarded first and foremost as a cooperative, economic effort by nearly all of the oil producers in California to equitably adjust the production of oil from their wells to the normal capacities of the facilities available for handling it and to the regular and established market outlet for their product. Other reasons for the regulations of production are secondary, but are increasing in importance."

The witness admitted that waste has occurred in California production in the past and that some avoidable waste still persists despite the efforts of the state and the Central Committee, but asserted "The same condition applies in other industries just as strongly as in the oil industry."

"Not the least of the difficulties confronting all efforts to balance production and conserve petroleum resources in California, as elsewhere, is the fact that although oil producers are generally classified as major, intermediate or minor, according to their stature and resources, there are really only two classes, the permanent and the temporary," Allen explained.

"Those companies classed as permanent are to a great degree public institutions with their widespread ownership and with their established place in the national economic system. To them loss of relative position is a serious thing because it signifies that their place in the public interest is threatened. To assure their public of continued service and existence it is necessary for them to explore and exploit new reserves of oil and to maintain a constant reserve against periods of emergency and unsuccessful exploration. Oil producers of this class have a much longer perspective of their business than do those many smaller producers whose interest in the oil business is primarily limited to one or two generations.

"With some recognition of their public obligation but with a greater obligation to themselves and their families these smaller producers are interested primarily in making their money from the oil business in time to reap the greatest benefits themselves. Their ambitions are entirely natural and understandable and to a great degree have the sympathy of the public, but nevertheless this same attitude is the one which is most resistant to any kind of regulation or control that will tend to deprive them of the earliest possible benefits from their business. It is only by continuous and considerate education that such producers come to participate in voluntary self-regulation under the direction of the Central Committee.

"There is no need for federal intervention," Allen concluded.

Naval Reserves

The witness was questioned by Chairman Cole regarding the situation in the Naval petroleum reserves as portrayed by Rear Admiral H. A. Stuart, director, when he appeared before the committee last year. At that time he referred to the possibilities of finding new deposits by deep drilling.

"There are indications of probable great reserves lying in deeper sands under the Naval reserves," Allen replied. "As to the content of those sands one cannot be sure until they are drilled. There is, in California, in a development of deeper fields a steady discovery of the fact that large gas deposits underlie the larger structures. This naturally means, therefore, that there might be tremendous gas reserves under the Naval reserves which would be of doubtful immediate use to the Navy unless it could be liquefied. As to the reserves under the present important bearing sands, they are substantially of the magnitude indicated by Admiral Stuart."

Illinois Situation

A "great majority" of responsible operators in Illinois is in favor of a state conservation law, it was asserted by Ernest G. Robinson, production superintendent of Shell Oil Company, St. Louis.

"The refusal of a small minority, or even of one operator, to follow sound practices voluntarily makes it impossible to put into effect the constructive plans of the majority," he pointed out. "Without a law, the unrestricted rule of capture is still operative. With a state law it is possible to require operators to conform to accepted efficient practices."

Robinson questioned recent estimates that Illinois reserves were nearly 700,000,000 barrels, telling the subcommittee that he estimated them at only 430,000,000 barrels.

He admitted that continuance of Illinois production at its present rate would result in relatively early depletion of the proven reserves unless substantial new reserves are discovered, but contended there is little avoidable waste.

More than 90 percent of the area of the new Illinois fields has been developed on a "reasonable " well spacing program, he testified, although in the closely spaced areas there is admittedly economic waste and probably some physical waste. There is a waste of natural gasoline, because not all of the natural gas produced is being processed, he said, and there is considerable waste of gas through venting and burning, but the proportion of gas wasted can be reduced only by restricting oil production, as the present oil/gas ratio is efficient. Commercial utilization of the gas is not feasible under present circumstances, he explained, but reduction of output would permit processing and returning to the reservoir a larger proportion of the gas now being wasted.

Pennsylvania Don't Want

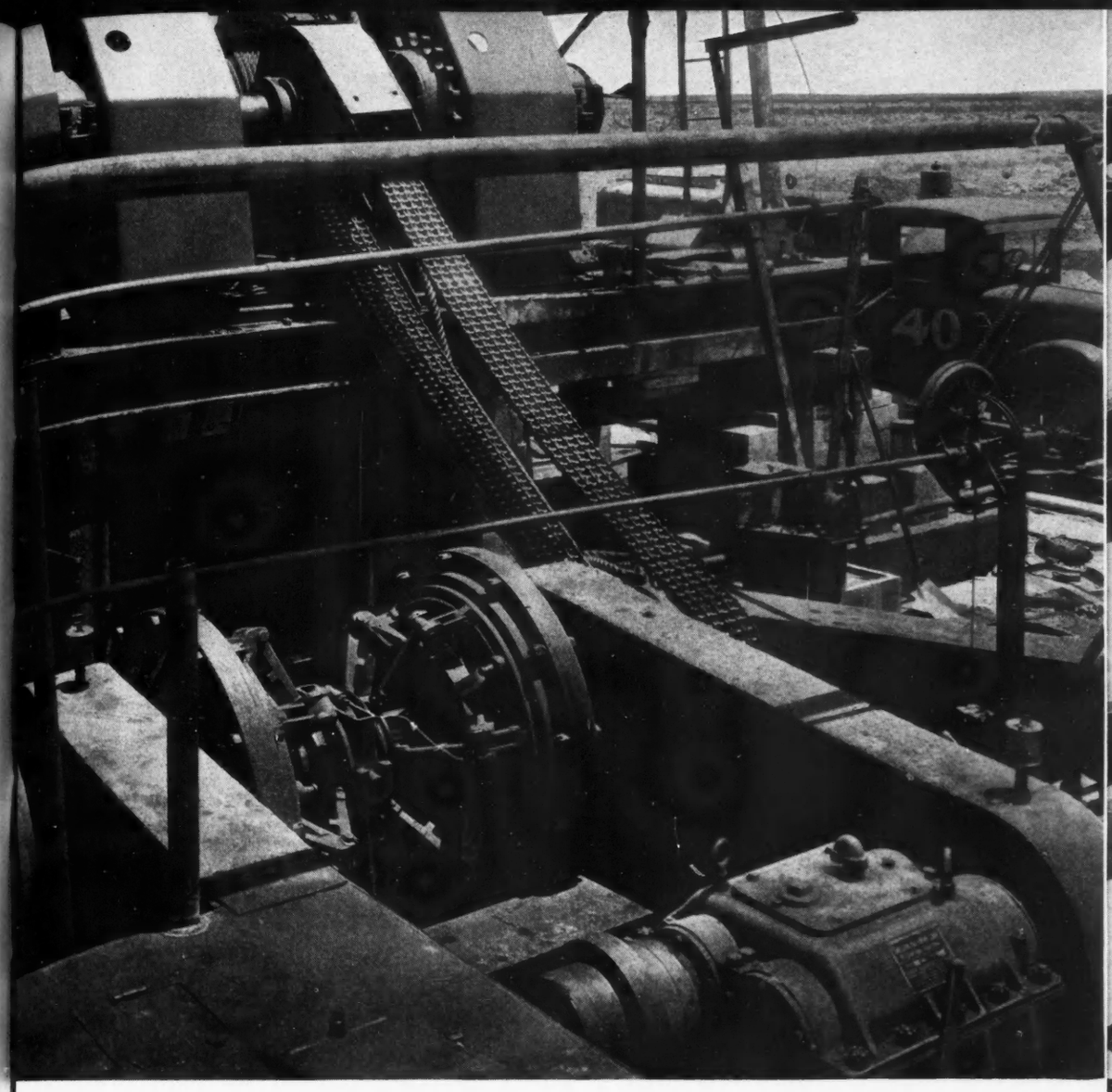
Pointing out that Pennsylvania producers have been concerned with the avoidance of waste almost from the inception of the industry 80 years ago, Forest E. Dorn, Bradford Pennsylvania, former president of the Pennsylvania grade crude oil association, declared that the record of the industry "indicates that there is no general need for an oil control bill."

Acknowledging that there are cases where it often seems desirable that sime superior authority might be invoked when state authority is either lacking or improperly administered, and that from time to time irritation at restrictions on production, imposed to avoid wasteful over-production, have caused some to feel that it might be desirable to have some authority over the state bodies, Dorn told the subcommittee that "these expressions have, for the most part, been momentary and passing, rather than fixed, and have expressed a mood of the moment rather than a considered opinion."

He called attention to the fact that the Cole bill is "actually limited" to the prevention of physical waste, yet "experts from the governmental bureaus have testified here to the remarkable success of the industry in the elimination of preventable waste." The three great weaknesses in the bill, he said, are the assumption that there can be a definition of waste applicable to all fields or pools and a formula for its correction; duplication of effort, and the grant of undefined powers to an appointive official.

Avoidable physical waste in the production of oil has largely been eliminated, it was said by Francis E. Heath, chief engineer of the Sun Oil Company, Dallas, but if it were possible to apply current good practices throughout the country, with nationwide reservoir control, it would not add any appreciable percentage to our total national reserves.

"By this we do not mean that there is no physical waste whatever occurring, or that no avoidable physical waste would occur if sound waste prevention regulations were not enforced by state regulatory bodies in cooperation with the industry," he explained. "We believe, however, that the present results obtained by the intelligent enforcement of sound state waste prevention laws has resulted in the reduction



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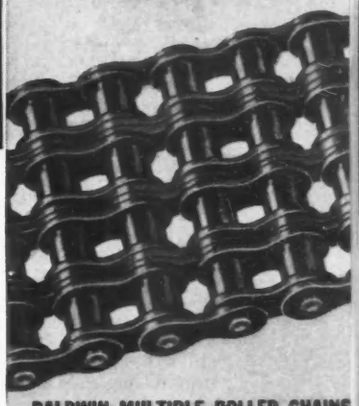

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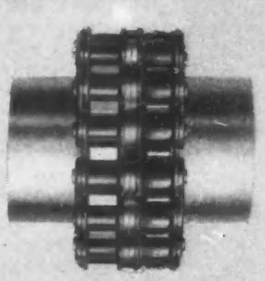

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of avoidable physical waste practically to a minimum."

Heath contended that federal regulation is unnecessary, testifying that a study made in an endeavor to determine the ultimate loss of reserves due to the present existing avoidable waste occurring in the production of oil showed that it amounts to less than one percent of the present national reserve.

"This may seem to be surprisingly small, but when one considers that practically all of our recently added reserves as well as many of our older large fields are being produced without waste, it is readily understandable," he said.

Differing from Ernest O. Thompson of the Texas Railroad Commission and others who contend that well spacing is a negligible factor in conservation, and that wide spacing saves development costs rather than oil, Monroe G. Cheney, president of Anzac Oil Corporation, Coleman, Texas, asserted that rapid progress toward solution of the spacing problem has been made by the industry through application of sound engineering principles.

This has been one of the major problems of the industry throughout its history, Cheney asserted, involving serious questions of physical and economic waste and property rights. "If the wells are drilled too far apart some oil otherwise economically recoverable may be left in the reservoir," he explained, "and if drilled too closely both oil and capital may be wasted."

The witness illustrated the evils of excessive drilling by citing the East Texas field as showing that improper spacing and inequitable allocation of allowables "invariably" obstruct oil conservation.

"Excessive drilling tends to create current oversupply of oil, demoralization of prices and premature abandonment of many small wells, especially in older fields," he argued. "It is obvious that close spacing has been one of the main causes of excessive drilling. With present day rapid drilling methods, new fields can be quickly drilled and large flush production developed much beyond current needs. This results in dwindling daily allowables per well and general dissatisfaction with proration schedules and conservation programs."

The chief objective of proper spacing plans, Cheney contended, must remain the production of the maximum amount of economicaly recoverable oil from a minimum number of wells, "having in mind that high percentage recovery of oil commonly depends on proper control of the pool production rate and the efficient operation of wells rather than on the close spacing of wells.

"The unique difficulties which arise from the migratory nature of oil should not be allowed to displace or defeat the application of sound engineering practices," he said. "The evil effects of the 'rule of capture' theory are being rapidly reduced or eradicated by the setting of fair and equitable allowables and the adoption of uniform and wider spacing of wells."

First Step Toward Monopoly

Compulsory unitization would be the first step toward monopoly, it was warned by Winston P. Henry, president of Putnam Oil Company, Houston, representing the Independent Petroleum Association.

Admitting that the Cole bill does not specifically call for unitization, Henry pointed out that much testimony on that question was presented by government witnesses and it was recommended by the National Resources Committee, so that it has become one of the issues in the situation.

"The whole thought of the bill and the report of the National Resources Committee is based on the assumption that the state authorities and the oil operators are guilty of waste and that the federal government would be more efficient if given control," he charged. "Is there any right to this assumption of superiority?

"The national resources committee states that between seven and eight percent of the production of the United States comes from government-owned or controlled lands. What has the government done on these lands to indicate its superiority? Let us examine, for instance, the government-controlled lands of the Osage Indians in Oklahoma. This area has been producing oil for approximately the past 35 years. Only in recent years have any progressive steps been taken along the lines of conservation, and nearly all these progressive measures have been promoted and inaugurated by individual producers and not by the federal authorities.

"We maintain that compulsory unitization can never be carried into effect except possibly by arbitrary decisions of political appointees, and the destruction of all constitutional guarantees to individual property rights."

It was pointed out by Chairman Cole that in his appearance before the subcommittee Secretary Ickes denied there was any intention of forcing unitization, but Henry steadfastly contended it would be one of the inevitable results of federal control.

While compulsory unitization is opposed, he said, much can be accomplished by voluntary agreements, which in many instances have been proven to be practical although, he admitted, many objections have been raised against them by independent operators. Under either form of agreement, he pointed out, the independent operator gets the short end of the deal when the agreement involves lands of the major companies.

Hamon Opposes for Stripper Wells

Voicing apprehension over the effect of the proposed legislation on the stripper-well owner, whom he characterized as the "share cropper" and "guinea pig" of the industry, Jake L. Hamon, Dallas, president of the National Stripper Well Association, declared that "if ever a bill is certain to remove the small well owner from the oil picture, it is this bill—if it is adopted."

"Whether such is its calculated purpose is, of course, unimportant," he testified. "That may be subordinate to its practical effect, which is the inevitable elimination of the small independent operator who is now the backbone of the oil industry. I do not believe any of those urging its passage have any such desire or intention, but regardless of the intentions, such is bound to be the result. And once eliminated from the picture as an independent economic entity, the small oilman is going to have a very difficult time ever re-entering the oil business on a similar footing.

"Moreover," he continued, "aside from the matter of expense, we have no confidence that a federal bureau would be wiser than the state agencies, or better able to regulate the oil business in the public interest. The stripper-well operator does not view the Department of the Interior with a very friendly or trusting eye. The unjust and absurd radio broadcasts which have been sponsored by the department, depicting all of us as profligate wastrels, have not increased our confidence in a fair deal from that direction. The Venezuelan trade agreement which lets in a flood of foreign oil and keeps the price of the stripper wells' product down almost on a level with the cost of production, is not an indication to us that our interests are being zealously looked after in Washington.

"I do not pretend to foresee the particular forms which federal regulation might take, to the injury of us stripper-well operators. My point is that federal regulation will of necessity be more rigid and less flexible, more general and less responsive to varying local considerations, than state regulation."

Hamon denied that public interest requires enactment of the bill, asserting that instead of bringing conservation, it would create waste by increasing the operating costs of the stripper-well operators "to the point where abandonment of the stripper wells would be inevitable."

Would Bring "One Man Monopoly"

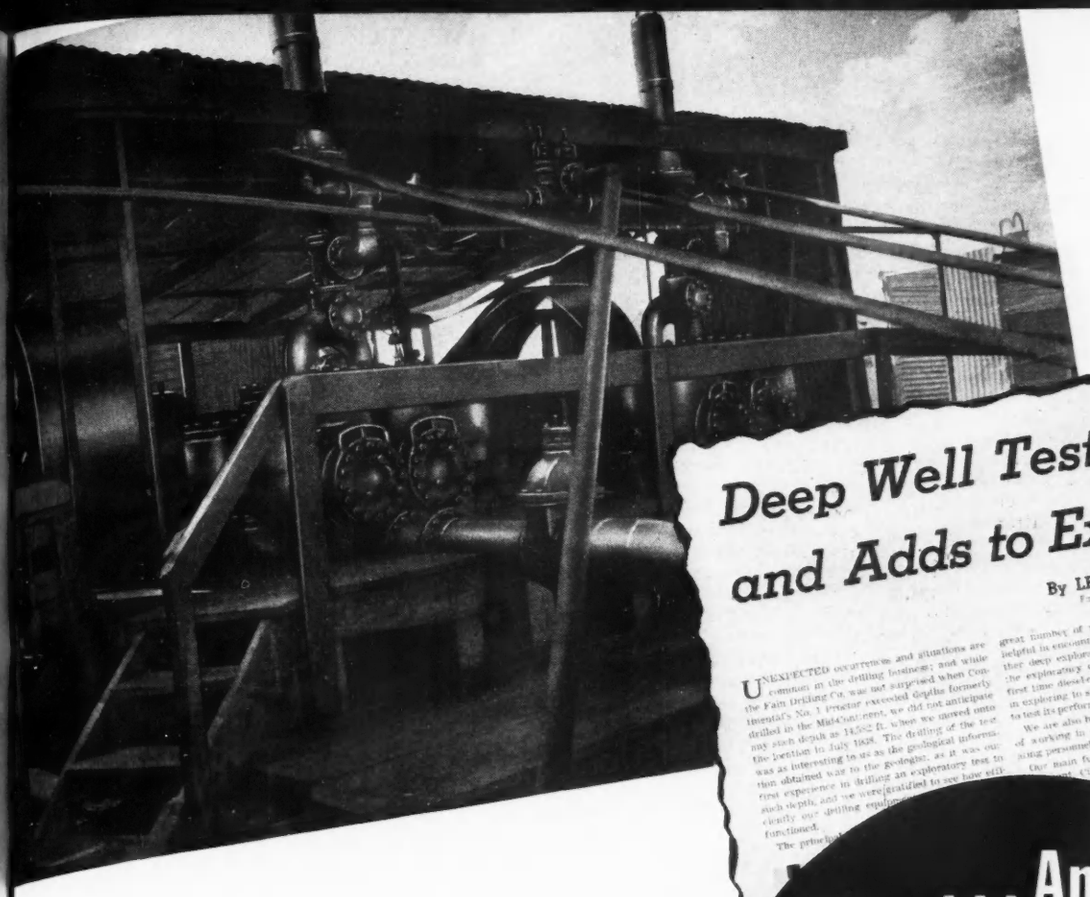
Federal control would bring about a "one man monopoly" just as unsound and as detrimental as any other monopoly, it was charged by H. B. Fell, Ardmore, Oklahoma, executive vice president of the Independent Petroleum Association, in a strong defense of market demand restrictions under state conservations laws.

Fell declared that the federal government can best serve the industry by cooperating in an effort to make effective a sound conservation program, and suggested that "in order to provide equal opportunity for the domestic producers to compete with imported oils," imports be taxed at a rate "equal to the difference in cost of the domestic and foreign products at the Atlantic seaboard."

Instead of this, however, he pointed out, "the small excise taxes that were in effect on imported crude oil and fuel oil were reduced 50 percent on imports up to 5 percent of the amount of oil refined in this country, in the reciprocal trade agreement with Venezuela.

"We recognize that crude petroleum is a natural resource which should be conserved and that no avoidable waste thereof should be permitted," he told the subcommittee. "It would seem self-evident that it is to the best interest of those engaged in producing crude petroleum to prevent waste thereof to the greatest extent possible. So from the selfish point of view, if for no other reason, the industry would naturally favor the conservation of our petroleum resources."

Market demand for oil is not an abstraction, but a concrete factor when considered in connection with the actual



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operation of an oil field, Fell testified. "Limitation of production to market demand is not only essential as a waste prevention method; it is equally essential to the protection of the small independent producer," he declared. "It is only by this means that he can be assured of a fair and ratable participation in the markets for oil and of a ratable production of oil from his properties.

"It must be recognized, of course, that any limitation of production, whether to an efficient economic rate of recovery from the reservoir or to reasonable market demand, does incidentally affect price. If the conservation agencies of all the state should over a period restrict the production substantially below demand and thus create or maintain a shortage, price-fixing would result. There may have been some efforts in this direction. However, this is an abuse of the concept involved. As a matter of history the states have not taken advantage of the concept to restrict production unduly to raise or fix prices."

If a reasonable and stabilized price does result from a balance of supply with demand, he argued, it will help materially in preventing the premature abandonment of stripper wells.

"The important fact to bear in mind," he cautioned, "is that limitation of production to current consumptive demand is a necessary procedure in the prevention of actual physical waste and in assuring to all producers a fair and ratable participation in the market outlet and a fair opportunity to produce their ratable share of the oil.

"Any sound conservation program, it seems to me, should be based upon an endeavor to secure the most oil for the least cost for the longest period of time from the known reservoirs and from reservoirs that may be discovered in the future."

Would Eliminate Wildcats

Wildcatting will be entirely eliminated if control legislation is enacted, it was predicted by E. H. Moore, Tulsa.

Assuring the subcommittee that he is strongly in favor of conservation, Moore asserted that a federal bureau "would retard our progress, would discourage individual initiative, and result in a dwindling of known oil reserves."

"I can imagine nothing more certain to bring on the long predicted shortage of petroleum than federal regulation of discovery efforts," he said.

"It may be argued that there is nothing implicit in the bill that touches wildcatting, but as is usual with statutes of this character, it will contain a vast reservoir of undefined power, and that power would be asserted. It would be asserted on the slender theory of national defense, public welfare and effect upon interstate commerce."

New fields must continue to be found if supply is to be maintained, Moore said, pointing out that the "best way to find them is to go out and look for them."

Explaining the methods under which wildcatters operate and the manner in which they get "dry hole money," he pointed out that the great percentage of discoveries are made by such adventurers.

"If it had been left to science, and federal bureaus that would necessarily make application of such principles, the great East Texas oil field would yet be undiscovered," he commented.

Lovejoy Asks "Who Started This?"

Sharply attacking Secretary Ickes and other government officials supporting the legislation, John M. Lovejoy, New York, president of Seaboard Oil Company, declared that even while they advocated the bill they admitted the progress made by the industry toward waste prevention.

"It is strange to find that important government officials, whose duties suggest that they should be thoroughly posted, testified that they knew little or nothing of the bill, its primary purpose or its parentage," he asserted. "Hugh D. Miser, in charge of the Fuel Section of the Geological Survey, disclaims responsibility for authorship. H. A. Breakey, Petroleum Economics Division of the Bureau of Mines, says that he had never seen the bill. Alfred G. White, chief economist of the bureau, could not explain why the legislation had been proposed. David Hudson, assistant solicitor of the Interior Department, admitted his inability to answer questions as to the policies behind the bill."

Contending that army and navy officials were called to testify on the bill "apparently to create an impression that there exists some connection between this legislation and the important and appealing subject of national defense," Lovejoy dismissed as fantastic the fears expressed over the possibility of a lack of supply in time of emergency.

"The possibility of any stringency in the supply of petroleum and its products for the armed forces, as far ahead as we may reasonably look, is too remote to be given serious consideration," he declared. "The nation's production, transportation and refining facilities comprise ample excess capacity to meet the needs of any possible emergency for the national defense."

Lovejoy alleged that proponents of the bill attempt to create an impression that extraordinary waste exists, "by citing practices long since discarded by the industry," and sharply criticized the "misleading, destructive and grossly unfair" propaganda in broadcasts sponsored by the department in an effort to plant the idea of waste in the public mind.

"Today," he told the subcommittee, "current demand for crude petroleum is the result of the interplay of an intricate system of checks and balances within the producing industry and between the industry and the consumers of its products.

"But if demand is to be determined on the 'prudent use' theory, and production limited to the commissioner's determination of prudent use, all else being wasteful, then under the terms of the bill, we would be placing in the hands of one man dictatorial economic powers of tremendous and unprecedented magnitude."

Statements in opposition to the legislation were filed with the subcommittee by Representatives John M. Houston (Democrat, Kansas) and Phil Ferguson (Democrat, Oklahoma).

Congressman Houston declared that "Kansas neither needs nor welcomes federal control of its oil industry" and that the conservation laws of the state are "sound in principal and practice and administered equitably." Representative Ferguson contended that the proposed federal agency, "at any reasonable cost," would be unable to do as good a job as the states have done toward eliminating waste.

Ickes charges Illinois official blocking oil conservation

Washington again stepped into the Illinois oil conservation controversy last week when Secretary of the Interior Harold Ickes accused Lieutenant Governor John Stelle of Illinois of blocking oil control legislation while holding a "financial interest" in the industry.

Stelle, who last week entered the contest for Democratic nomination for governor, has consistently opposed control legislation when the subject was before the legislature in the past. He recently contended there was "a vast difference between conservation and proration" and maintained he favored a "positive constructive" program based upon "the true principles of conservation."

Ickes' charge came at the beginning of a state primary campaign which is certain to have frequent mention of oil conservation legislation before election April 9.

"Some states, such as California, which is the second largest oil producer, and Illinois, which ranks fourth, do not even pretend to have conservation laws," Ickes said. "The result, particularly in Illinois, is reckless waste of the wealth of the people.

"In that state we find a lieutenant governor, theoretically elected to serve the interest of the whole people of his state, blocking a much needed and sound oil conservation law while being at the same time financially interested in oil properties.

"Unfortunately, not only in Illinois but elsewhere we discover a nauseous mixture of oil and politics," Ickes added.

Stelle countered Ickes' charge of personal interest by declaring he had "land for over 30 years in Illinois."

"I don't see anything wrong about that," Stelle said.

Disney loses fight against oil trade pacts on House floor

By a margin of nine votes, the House of Representatives February 23 refused to adopt an amendment to the reciprocal trade agreements act sponsored by Congressman Wesley E. Disney, of Oklahoma, to prohibit the president from granting any further reductions in excise taxes on imported oil, coal, copper and lumber in the negotiation of reciprocal trade agreements with other countries.

Two counts on the issue were necessary. A standing count of 108 to 140 was unsatisfactory to supporters of the amendment, who demanded a teller count which resulted in a vote of 155 to 164.

Supported by members from other oil states, Disney charged that since approval of the Venezuelan agreement imports have been sharply accelerated but that no benefits to American exporters have yet been shown.

The Oklahoma Congressman was supported by Representatives Ralph E. Church (Rep., Ill.), and Jed Johnson (Dem., Okla.), who urged adoption of the amendment.

U. S. Court Decision Threatens Foundation of Texas Proration

In a far-reaching opinion, a three-judge federal court sitting at Austin last week invalidated a Texas Railroad Commission proration order for the East Texas field as it applied to leases of Humble Oil & Refining Company and Rowan & Nichols. Judges Frank Sibley of Atlanta, Georgia, James V. Allred of Houston, and R. J. McMillan of San Antonio, concurred in the finding, but did not immediately issue a formal order.

The decision, while it applied directly only to leases of the two companies in the single field, was interpreted as invalidating, in effect, the entire proration scheme built around minimum allowables for oil wells. The court indicated that proration orders should be on the basis of oil in place in the various fields, with acreage and sand thickness as determining factors.

The decision was followed with a request to Governor W. Lee O'Daniel by Commissioner Jerry Sadler for a special session of the legislature to amend the oil laws.

The federal court granted the commission 10 days in which it could determine whether it would appeal, and indicated that if no appeal was to be taken additional time would be granted to prepare a new order or to hold a hearing before such an order was prepared.

The net result appears to be, however, that the commission must issue a new order, since the court mentioned bond and there is no fund from which the commission might obtain bond sufficient for this appeal. Humble Oil & Refining Company alleged that it is losing $23,000 a day, and the bond might run into millions of dollars.

The court did not hand down a written decision but spoke from the bench. Below is a stenographic record of the court's opinion:

"The conclusions we are about to give in this case are in a general way. The paper I am about to read is not final, and is in the nature of conclusions of law, but we reserve the right to modify or change them so as to express more exactly what we think the law is if it becomes necessary. But for the present purposes we agree:

"1. The court has jurisdiction in each case.

"2. In the case of F. W. Fischer, an injunction either temporary or permanent, ought not to be granted because no irreparable injury is shown to him by the operation of the order. It does not appear to operate unreasonably as to him.

"We find the situation is otherwise as to the other litigants. As to Rowan & Nichols and Humble, we think that the present injury to each of them is clear. It is clearly and practically admitted. The only reply to it is that in the future it will be corrected. We regret that this contingency is so uncertain as to make it our duty to look to the present operation and to show they have established such an injury that in its nature is irreparable; and that without remedy at law makes it our duty to examine the order or that part of the order.

"That part of the order which fixes the top allowable, the commission had the power to make to prevent waste. It is not arbitrary or unreasonable.

"The statute which declares that pumping wells not capable of producing more than 20 barrels over a 30-day period are marginal wells and are not to be restricted by the commission is not patently invalid. They are wholly on the edges of the field, and are approaching exhaustion. The legislature could make of them a separate class, and in view of the expense of operating them by pump and their probably short life, the fixed allowable granted them is probably not arbitrarily fixed. The amount of the present top allowable to them is less than one percent, and the effect on fairway wells, which is here complained of, is too uncertain and insignificant to require a decision on the constitutionality of the statutory classification.

"The portion of the order which prorates the remainder of top allowable among the non-marginal leases and wells so operates that about ¾ of it is distributed on a flat basis per well so as to give each well an initial 20 barrels per day. With 3 days of shutdown each week, this makes an average of 11.7 barrels per day. The remaining ¼ is prorated by a formula which takes account of the productive capacity or potential per well and the acreage, sand thickness, and bottom-hole pressure of each lease. All these factors are considered in fixing the allowables for the wells on the lease.

"This operates to restrict more drastically the production from the best wells and leases in the fairway where are those of Rowan & Nichols and most of those of Humble Oil, than that from less productive wells to the east and west and tracts more densely drilled also in the fairway. For these reasons, the order is so unreasonable as to make it contrary to the statutes and the Fourteenth Amendment. The question under the two seems to be approximately the same. If the order is unreasonable, the statute does not give the commission the authority to make it. If it is so unreasonable as to appear arbitrary, the Constitution does not allow it to be done either by the legislature or the commission.

"The commission's orders of this sort were held unreasonable. A later order which combined per well and potential, so that about ½ of the total was distributed according to potential was upheld as reasonable.

"It is not now held that no flat per-well allowable could be made, but only that ¾ of the total should not be so proportioned.

"The reason for distributing ¾ of the allowable on a flat basis per well or for distributing any of it on that basis is not precisely disclosed. As in the case of marginal wells, it seems to be thought necessary in order to keep the poorer wells pumping or going at all. If they were forced out, the oil that could be produced might never be produced and therefore wasted, or the shutdown might be a detriment to the owner's property according to the Constitution. The evidence here, however, is that even with a pumping well, production can be profitably continued on 5 to 10 barrels per day. We can think of no good reason why a higher allowable should be fixed for non-marginal wells when to do so would make ¾ of the distributable oil on a basis which is neither according to the productive capacity of the well nor according to the amount of oil on the leases.

"That the legislature fixed a figure of 20 barrels on marginal wells is without great significance for they are perishing wells. Those on the border line will soon enough enter that class and need not be treated as such.

"To distribute ¾ of the top allowable on a flat basis per well without regard to oil reserves of the leases or the productive capacity of wells which constitutes the value of the property, is unreasonable, and therefore in violation of the Constitution and the statutes.

"It is not for us to suggest a proposal for a formula. We think the present proportion unsustainable. We do not say that the time element and the probable life of the well may not be considered in the proportionment, although there is necessarily much uncertainty involved. We do not say that ultimately each lease must be allowed to produce in exact proportion to its reserves or potential. All these factors may be given consideration in the efforts to achieve the public aim of conservation.

"Some inequalities attend all legal regulations and must be borne, but the regulation itself must be based on fair principle and founded on good reason. Previous decisions have established a flat per-well proportionment to be unreasonable and also one which was substantially that, although some effect was given a well potential. We now hold that with the wide differences in well density and well capacities that in the East Texas field, a proportionment of ¾ on a flat well basis is not justified on good reason and is unreasonable.

"As a conclusion from this holding we will deny a temporary injunction to Rowan & Nichols for the reason that one was denied in respect to the Humble Company and we think it best to let matters go along on an even keel.

"A permanent injunction will be granted both to the Rowan & Nichols and Humble Oil, but we do not wish to enter an injunctive decree and upset the oil field. For that reason, we will await a decision as to whether or not appeal is to be taken or whether or not the decision will be submitted to on the part of the railroad commission. If it is submitted to by the railroad commission, they probably will require time to make a new order. If it is to be appealed, we will have to enter the final decree that it may be appealed from. But we wish to handle this in a practical way. If there is an appeal on the findings of fact, we will require the assistance of counsel and perhaps more elaborate conclusions of law. But this is our decision for the present."

After this statement, Justice Sibley said that if the commission chose to appeal, a written order would be prepared and entered with the permanent injunction.

While most of the oil men were of the opinion that East Texas would be the only field affected, those who had made a study of the opinion pointed out that it required the commission to prorate on the basis of oil in place in every field in the state.

Since the court found fault with the minimum allowances granted to wells—20 barrels daily in the case of East Texas—and said it saw no "precise" reason for this grant, it was evident that acreage and sand thickness must play a major part in future proration programs.

To commission officials, this spelled the end of the oil man operating on very small tracts; and, since the court indicated that most of the East Texas allowable must be assigned according to the formula in effect, or some other formula, and consequently the per-well allowances reduced, the small tract owners in East Texas must have their allowables cut to 3 or 4 barrels daily, if the commission order is to comply with the court decision.

Obviously, this means financial disaster for hundreds of operators in East Texas, and certainly, if they can not operate their wells at a profit, then neither can the banks and supply companies who have mortgaged them and who will be forced to foreclose. Whether major companies would be able to take over their properties and continue to operate them with the small allowables which the court indicated should be assigned cannot be determined.

While commission officials spoke privately on the matter, they declined to issue statements at this time with the exception of Commissioner Sadler. The decision led him to send a letter to Governor Lee O'Daniel, asking for a special session of the legislature to cope with the problem.

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Allowables

Bureau of Mines drops crude demand estimate 1 percent

With gasoline stocks at an unusually high level and exports relatively low, the United States Bureau of Mines on February 21 forecast that daily average demand for domestic crude oil in March would be but 3,500,600 barrels, 28,400 barrels, or 1 percent less than the estimated demand for the current month but 4.5 percent above actual demand in March, 1939.

As a basis for its forecast, the Bureau pointed out that daily average crude production during the five weeks from January 6 to February 10 was 3,606,000 barrels, while runs to stills for the same period were but 3,471,000 barrels, resulting in an increase of 843,000 barrels in total crude stocks. During the same time, foreign stocks decreased 755,000 barrels, making the increase in domestic stocks 1,598,000 barrels, an average of 46,000 barrels a day, which, deducted from the production, leaves an indicated demand of 3,560,000 barrels daily.

Unbalanced Yields

"Relatively high runs, unbalanced yields in relation to the demand for products, and the decline in gasoline exports in the last quarter of 1939 have resulted in a material seasonal excess of gasoline stocks," the report commented. "The total stocks of finished and unfinished gasoline rose to 82,900,000 barrels on December 31, 1939, compared with 71,700,000 on December 31, 1938 an increase of 11,200,000 barrels. The relatively low distillate fuel oil stocks on January 1, 1940, east of California, combined with unusually severe weather, have contributed to higher runs to stills than were anticipated and point to a peak of finished and unfinished gasoline stocks of probably 98,000,000 barrels, or more, on March 31, 1940.

"As these additions to normal storage may represent about one-third of a possible five to six percent increase in domestic gasoline demand during 1940, their absorption involves either a postponement of the usual seasonal increase in runs, or some reduction in normal gasoline yields or both. Gasoline export trends are still materially below the high levels for the same periods of last year. The reduction of gasoline stocks will be a major problem in the second and third quarters of this year."

See Gasoline Demand Increase

The bureau foresees a domestic demand for motor fuel of 45,100,000 barrels, representing an increase of 6 percent over the actual demand of 42,520,000 barrels in March of last year. The estimate of 3,400,000 barrels for exports, however, is almost 1,000,000 barrels less than the actual shipments of 4,336,000 barrels in March, 1939.

Stocks of finished and unfinished gasoline on December 31 amounted to 82,865,000 barrels, it was pointed out, and statistics of the American Petroleum Institute indicate an increase of some 7,600,000 barrels during January, bringing them to about 90,500,000 barrels as of January 31, The bureau estimates an increase of 1,000,000 barrels in finished gasoline stocks in March, which will bring them to approximately 98,000,000 barrels by the end of next month.

Benzol and direct sales of natural gasoline are estimated at 800,000 barrels, making refinery production 48,700,000 barrels, which was allocated by the bureau among the various districts as follows:

East Coast, 6,430,000 barrels; Appalachian, 2,010,000 barrels; Indiana-Illinois, 8,930,000 barrels; Oklahoma, 2,790,000 barrels; Kansas-Missouri, 2,510,000 barrels; Inland Texas, 3,540,000 barrels; Gulf Texas, 12,480,000 barrels; Gulf Louisiana, 1,480,000 barrels; Inland Louisiana-Arkansas, 830,000 barrels; Rocky Mountain, 1,280,000 barrels; California, 6,420,000 barrels.

The report estimated natural gasoline to be blended at the refineries at 6.5 percent of the total gasoline production of 3,170,000 barrels, and the yield of straight-run and cracked gasoline at 44 percent, application of which to the production of 45,530,000 barrels of gasoline gives crude runs of 103,520,000 barrels or 3,339,400 barrels daily. Foreign crude runs are estimated at 2,200,000 barrels.

Other estimates were 5,000,000 barrels for export, a daily average of 161,000 barrels for exports compared with forecasts of 172,000 barrels for February, 185,000 for January and 194,000 for December; and 2,200,000 barrels for fuel and losses, which would make the total demand for domestic crude in March 108,520,000 barrels, or 3,500,600 barrels daily, which is allocated among the producing states as shown in the accompanying table.

Bureau estimate of crude-oil demand in March (barrels daily). (As no changes in crude-oil stocks are involved in these estimates, they represent demand rather than production)

STATE	Forecast March, 1940
Texas	1,330,600
California	587,100
Oklahoma	420,300
Illinois	329,700
Louisiana	253,200
Kansas	153,900
New Mexico	103,200
Arkansas	65,500
Michigan	64,800
Wyoming	60,600
Pennsylvania	55,000
Kentucky	15,200
Montana	15,200
New York	14,700
West Virginia	11,000
Ohio	8,700
Indiana	7,100
Colorado	3,500
Mississippi	1,300
	3,500,600

News Index

General:

Washington 55
Courts 65
Allowables 67

Men in News 73

Markets-Statistics 74

U. S. Field Operations:

Arkansas 90
California 91
Completions 92
East Texas 82
Illinois 77
Indiana 77
Kansas 78
Louisiana Coast 89
Michigan 91
Mississippi 90
North Louisiana 89
North Texas 80
Oklahoma 78
Rocky Mountain 90
Southwest Texas 84
Texas Gulf Coast 88
West Texas 80
Wildcat Development 96

Texas refuses to follow bureau recommendation

Announcement of the United States Bureau of Mines that estimated consumer demand for Texas oil during March is 1,330,600 barrels daily, down 40,800 barrels from February, brought opposition from all three members of the Texas Railroad Commission last week, and all indicated they would not follow the recommendation in fixing allowables.

The new figure was 102,000 barrels below current allowables fixed by commission proration orders. Commissioner Jerry Sadler declared flatly that he would recommend that Texas not abide by the recommendation. He insisted that there was a firm demand for more oil, pointing out that more is being produced and that no material storage increase had been recorded.

In a prepared statement, Commissioner Ernest O. Thompson called the Bureau estimate "absurd."

"Last week Texas crude in storage decreased 907,000 barrels," Thompson said. "The figures collected at the statewide hearing on stocks show that there is very little crude readily available for immediate delivery anywhere in our state. While Texas was reducing her crude storage 907,000 barrels last week, Oklahoma increased her crude storage 414,000 barrels and Kansas increased her crude storage 303,000 barrels. The big demand for oil is now from Texas.

"The way to keep our markets is to fill the orders when we have the customers. We had better sell our crude while we have the markets for it or the

markets will be driven away and will never return.

Texas Should Fix Own

"It strikes me that Texas had better fix her own market demand, as we can not, it appears at this time, rely on the Bureau's estimate," Thompson added. "There is something wrong when our stocks are low and getting lower and then the Bureau says we should produce less oil.

"Section 6A of the conservation law of Texas says that the commission shall at all times take into consideration and protect the rights and interests of the producing and consuming public of crude oil and its products such as gasoline and lubricating oil.

"Now is the time for Texas to protect her markets and fill the demand that is here," he added. "We should not turn away customers who want Texas oil. If we do, we will regret the day when we do it."

Meanwhile, oil operators swarmed into Austin demanding higher allowables. Several refiners reported they were either closed down or would be forced to close soon unless increases were ordered. Apparently others would have to follow suit if the commission should abide by the Bureau recommendation and cut another 100,000 barrels from state production.

Effect on Cole Bill

The thought uppermost in the minds of Texas officials and Texas oil men was the effect on the Cole bill, now before a congressional subcommittee, of any commission order that would fix the Texas allowable materially higher than the figure recommended by the Bureau. In the event this should occur, it was possible that other states might open up, with consequent damage to the general program and a virtual admission on the part of the oil producing states that they would choose to follow their own findings rather than be governed from Washington.

With this argument in his hands, Secretary of the Interior, Harold L. Ickes might have, for the first time, some evidence to support his contention that the states do not intend to follow the recommendation of his department and that the only way the public can be assured of compliance is to pass some law along the lines of the Cole bill.

Gasoline Stocks in the United States in Hands of 51 Companies

As reported to Railroad Commission of Texas February 16, 1940

Figures Indicate Barrels

COMPANY	Gasoline Inventory 4-1-39	Gasoline Inventory 12-1-39	Gasoline Inventory 2-1-40	Present Gasoline Stocks	Change in Gasoline Stocks from Year Ago	Estimated Gasoline Inventory 6-1-40
American Mineral Spirits Co	53,902	78,896	85,893	89,550	+ 6,538	.....
American Petroleum Co.	101,160	179,427	141,107	145,106	— 50,290	100,000
Atlantic Refining Co.	2,062,000	1,885,000	2,024,000	2,024,000	+160,000	2,050,000
Bareco Oil Company	235,524	224,847	262,381	265,636	+ 43,737	200,000
Barnsdall Oil Company	.....	.....	.....	.....	.....	.....
Cities Service Oil Co.	2,687,000	2,821,000	.....	2,801,000	+225,000	2,400,000
Coastal Refineries, Inc.	68,000	5,000	51,000	51,000	— 18,000	25,000
Coleman Refining Corp.	452	794	1,430	1,260	— 765	715
Col-Tex Refining Co.	70,399	71,428	136,570	166,343	+ 90,432	116,000
Consolidated Oil Corp.	4,075,000	3,454,000	4,330,000	4,330,000	+521,000	4,694,000
Continental Oil Co.	1,608,859	1,165,784	1,394,909	1,394,909	—229,218	1,361,172
Cosden Petroleum Corp	45,072	67,961	85,219	69,811	— 3,076	30,000
Crown Central Pet. Corp.	131,251	242,574	379,722	388,243	+115,296	150,000
Gulf Oil Corp.	5,136,465	5,207,188	5,408,775	5,609,082	+653,984	5,580,300
Houston Oil Co. of Texas	5,999	3,840	4,684	5,045	— 1,181	5,000
Howard County Ref. Co.	4,720	6,600	4,155	3,430	— 1,480	.....
Humble Oil & Refining Co.	1,861,240	2,857,357	2,677,961	2,677,961	+397,944	2,849,961
Mackley Petroleum Co.	1,320	2,000	810	790	— 525	952
†Magnolia Petroleum Co.	705,000	790,000	1,531,000	1,531,000	+918,000	2,100,000
Maritime Oil Co.	64,352	79,253	128,444	128,444	+ 69,952	75,000
Moutray Oil Company	4,288	7,082	9,531	10,328	+ 4,374	7,000
Ohio Oil Co.	534,544	102,044	235,574	248,528	—248,216	307,532
Olney Oil & Refining Co.	6,490	8,444	6,023	6,067	.....	6,000
Onyx Refining Co.	4,050	4,950	6,640	7,920	+ 4,380	4,775
Pan-American Refining Co.	2,941,000	1,992,000	2,620,000	2,620,000	+ 31,000	2,500,000
Panhandle Refining Co.	72,509	56,353	43,135	41,248	— 36,472	35,000
Phillips Petroleum Co.	2,070,404	2,021,357	2,459,874	2,459,874	+802,829	2,639,000
Pioneer Oil & Refining Co.	1,090	511	1,235	687	+ 137	800
Pontiac Refining Corp.	40,292	161,514*	223,973*	219,329*	+155,935	.....
Premier Oil Refining Co.	7,835	15,363	15,775	20,042	+ 11,895	15,775
Pure Oil Co.	2,245,052	1,578,180	1,670,442	1,670,442	+325,551	2,050,000
Rado Refining Co.	1,500	2,260	1,830	2,300	— 292	2,380
Republic Oil Refining Co.	745,411	748,745	653,000	678,346	+ 24,000	.....
San Antonio Refining Co.	265	.....	.....	.....	— 86	.....
Shamrock Oil & Gas Corp.	38,184	55,777	111,713	120,462	+ 25,597	158,293
Shell Oil Co., Inc.	5,421,000	4,473,000	4,964,000	4,977,000	— 89,000	5,278,000
Skelly Oil Co.	728,448	360,002	549,343	553,207	— 93,758	550,000
Socony-Vacuum Oil Co., Inc.	6,564,000	5,968,000	7,798,000	7,798,000	+1,744,000	9,670,000
Southport Petroleum Co.	294,455	247,795	290,852	295,462	— 43,643	200,000
Southwestern Oil & Ref. Co.	21,000	82,000	119,000	139,000	.....	70,000
Standard Oil Co. of Indiana	5,984,577	5,079,645	5,528,515	5,528,515	+144,247	6,243,121
Standard Oil Co. of New Jersey	5,800,000	5,446,000	5,796,000	5,796,000	+922,000	5,350,000
Stanolind Oil & Gas Co.	68,552	39,760	50,051	50,051	— 1,563	50,000
Stone Oil Company	289,518	128,997	290,580	304,057	+ 47,590	50,000
Sun Oil Co.	2,350,000	2,205,000	2,820,000	2,885,000	+980,000	3,320,000
Taylor Refining Co.	383,000	572,000	658,000	658,000	+422,000	350,000
Terminal Refining Co.	140,515	114,108	231,629	236,882	+101,845	.....
Texas Company	7,915,748	6,290,203	7,975,501	7,975,501	+405,167	8,045,263
Texas Pacific Coal & Oil Co.	19,655	17,398	16,669	16,669	— 1,798	17,000
Tide Water Associated Oil Co.	1,502,000	876,000	1,136,000	1,136,000	—258,000	1,213,000
Valley Refining Co.	1,956	1,825	2,827	2,329	+ 926	2,000
Total	64,410,053	56,009,262	62,267,042	66,607,856	+7,369,388	67,823,044

* Includes aviation gasoline.
† Included in inventories for Socony-Vacuum Oil Co.

Texas survey reveals new ideas on economic stocks

The widely heralded "statistical rodeo" sponsored by the Texas Railroad Commission at Austin February 16 was not the spectacle that several previous meetings of the same nature had been. But it was richer in yield of cold figures on inventories of crude oil and gasoline held by the oil companies of the United States, more concerns having furnished data.

This latest assembling of statistics lacked the color of similar earlier hearings because fewer high-ranking executives attended, the figures having been supplied largely through local representatives; because the introduction of the material was made more or less secondary to other testimony; and because Commissioner Ernest O. Thompson, ring-master at earlier hearings, was absent on account of illness.

Crude Stocks Moderate

The industry's executives and economists have not materialy changed their ideas on the proper economic levels of crude oil and gasoline stocks.

Fifteen companies submitted estimates of correct national inventories as of January 1, April 1, and June 1, of this year, and their figures averaged approximately 224,000,000 barrels as the desirable level of crude stocks on each of those dates. (At present the stocks of refinable crude in the country total approximately 240,000,000 barrels.)

Shell Oil Company, Incorporated, was the most conservative in estimating crude storage requirements, having put down a round 200,000,000 barrels, and Standard Oil Company of Indiana and subsidiary, Stanolind Oil & Gas Company, were nearly as conservative, having agreed on 205,000,000 barrels. The other estimates ranged up to 244,000,000 barrels, the Atlantic Refining Company figure. Socony-Vacuum Oil Company's estimate of 225,000,000 barrels was about the same as the average for all companies. That of 230,000,000 barrels by Humble Oil & Refining Company was on the high side of the average, as was that of 240,000,000 by The Texas Company.

These estimates, like similar ones last August, reflected to some extent the particular situations of estimating companies, some of which were slightly short of crude while others were somewhat long. The figures made it evident that the country's crude stocks did not embrace any material surplus.

Gasoline Supply Excessive

The average of all 15 estimates on proper gasoline stocks as of April 1, 1940, was 80,596,000 barrels, although the figures ranged from 65,000,000 to 90,000,000 barrels. On the conservative side were Barnsdall Oil Company, which put down a figure of 65,000,000 barrels; Cities Service Oil Company, 76,000,000 barrels; and Standard Oil Company of Indiana, 76,600,000 barrels. Estimates of 80,000,000 to 83,000,000 barrels were made by Tide Water Associated Oil Company, Humble Oil & Refining Company, Skelly Oil Com-

Estimated Economic Levels of Crude Oil and Gasoline Stocks in the United States

Figures submitted to the Railroad Commission of Texas at Hearing at Austin, February 16, 1940

(Barrels)

COMPANY	CRUDE OIL			GASOLINE		
	1-1-40	4-1-40	6-1-40	1-1-40	4-1-40	6-1-40
Atlantic Refining Co.	244,000,000	244,000,000	244,000,000	72,700,000	85,900,000	83,700,000
Bareco Oil Co.	225,000,000	225,000,000	225,000,000	65,000,000	80,000,000	75,000,000
Barnsdall Oil Co.	225,000,000	225,000,000	225,000,000	65,000,000	65,000,000	65,000,000
Cities Service Oil Co.	.....	.....	.....	65,000,000	76,000,000	72,700,000
Col-Tex Refining Co.	230,000,000	230,000,000	230,000,000	77,000,000	87,000,000	81,000,000
Humble O. & R. Co.	230,000,000	230,000,000	230,000,000	68,000,000	81,000,000	78,000,000
Phillips Petroleum Co.	.....	.....	.....	75,000,000	87,000,000	83,000,000
Pontiac Refining Co.	.....	.....	.....	80,000,000	90,000,000	80,000,000
Shell Oil Co., Inc.	200,000,000	200,000,000	200,000,000	65,500,000	82,500,000	77,500,000
Skelly Oil Co.	230,000,000	230,000,000	230,000,000	65,000,000	82,000,000	78,000,000
Socony-Vacuum Oil Co.	225,000,000	225,000,000	225,000,000	64,100,000	82,950,000	76,600,000
Standard Oil Co. (Ind.)	205,000,000	205,000,000	205,000,000	65,000,000	76,600,000	74,600,000
Stanolind O. & G. Co.	205,000,000	205,000,000	205,000,000	55,000,000	70,000,000	70,000,000
The Texas Co.	240,000,000	240,000,000	240,000,000	71,500,000	83,000,000	80,000,000
Tide Water Associated Oil Co.	230,000,000	235,000,000	235,000,000	65,000,000	80,000,000	77,000,000
Average	224,083,333	224,500,000	224,500,000	67,920,000	80,596,000	76,806,000

pany, Shell Oil Company, Incorporated, Socony-Vacuum Oil Company, and The Texas Company. Higher estimates included those of 85,900,000 barrels by Atlantic Refining Company and 87,000,000 by Phillips Petroleum Company.

Actual stocks of gasoline are above all those estimates, with several weeks of further additions in prospect. The stocks hit a new peak of 93,985,000 barrels in the week ended February 17, and they threaten to go to 105,000,000 barrels by March 31, if recent rates of accumulation are maintained and if all available storage is not filled before then.

These figures indicate that gasoline stocks by spring will be at least 10,000,000 barrels greater than the most generous estimates of needed working stocks and at least 15,000,000 barrels above the more conservative estimates.

Industry Well Represented

The reports submitted to the Texas Railroad Commission embodied figures on the individual inventory positions of 51 companies, with regard to crude oil and gasoline, on February 1, 1940, February 1, 1939, April 1, 1939, and December 1, 1939.

These 51 companies, large, medium, and small, represented a large part of the industry and their inventories constituted about three fourths of the stocks in the United States.

Hold 76 Percent of Crude

The 51 companies in the aggregate held stocks of 182,781,208 barrels of crude on February 1, 1940. That was 76 percent of the total of 239,380,000 barrels held throughout the country at that time by all companies, comparison with Bureau of Mines data reveals.

Although the companies reported the total of 182,781,208 barrels of crude on hand February 1, 1940, they indicated that deductions for tank bottoms, filling pipe lines, and so forth left only 74,310,463 barrels available for immediate movement from place to place.

The 51 companies held 175,919,882 barrels of crude on December 1, 1939, and are thus indicated to have built up their stocks nearly 7,000,000 barrels in December and January.

However, they are operating now with about 29,000,000 barrels less of crude than on April 1, 1939.

The 51 companies reported that they expected to have on hand 185,910,448 barrels of crude on June 1, 1940, or about 3,000,000 barrels more than at present.

Gasoline Inventories

The same companies on February 1, 1940, held 62,267,042 barrels of gasoline, which constituted 70 percent of the total of about 88,700,000 barrels in the United States at that time.

The gasoline stocks of the 51 companies at the time of the hearing were around 66,607,856 barrels, or 7,369,388 barrels greater than one year previously, and about 2,000,000 barrels larger than last spring's peak, as the combined stocks of the group amounted to 64,410,053 barrels on April 1, 1939.

In the two months between December 1, 1939, and February 1, 1940, the 51 companies enlarged their aggregate inventory of gasoline approximately 6,000,000 barrels.

Although gasoline stocks normally increase until April 1 and then decline, the 51 companies expect to hold approximately the same quantity on June 1 as they did at the time of the hearing.

Crude Oil Stocks in the United States in Hands of 51 Companies

As reported to Railroad Commission of Texas February 16, 1940

Figures Indicate Barrels

COMPANY	Crude Inventory 4-1-39	Crude Inventory 12-1-39	Crude Inventory 2-1-40	Estimated Crude Inventory 6-1-40	Present Crude Available for Shipment
American Mineral Spirits Company	33,146	72,131	80,964	.....	.....
American Petroleum Company	142,709	135,409	169,332	100,000	25,000
Atlantic Refining Company	5,341,000	4,311,000	4,374,000	4,595,000	2,795,000
Bareco Oil Company	165,577	149,032	79,577	100,000	.....
Barnsdall Oil Company	409,426	515,293	707,770	500,000	200,000
Cities Service Oil Company	6,804,000	5,468,000	5,468,000	5,468,000	.....
Coastal Refineries, Incorporated	39,000	31,000	14,000	15,000	.....
Coleman Refining Corporation	598	308	1,679	1,000	.....
Col-Tex Refining Company	106,669	140,822	206,891	206,000	84,911
Consolidated Oil Corporation	13,419,000	9,931,000	10,250,000	9,900,000	4,000,000
Continental Oil Company	8,798,027	7,394,520	7,820,942	7,700,000	7,820,942
Cosden Petroleum Corporation	41,952	135,738	179,415	50,000	.....
Crown Central Petroleum Corp.	528,617	329,378	319,920	350,000	300,000
Gulf Oil Corporation	15,124,000	12,814,000	12,689,000	12,688,000	3,200,000
Houston Oil Co. of Texas	208,247	76,944	114,626	110,000	108,190
Howard County Refining Company	23,236	17,651	15,704	.....	15,704
Humble Oil & Refining Company	12,266,659	11,341,249	11,502,111	12,000,000	217,000
Mackley Petroleum Company	165	.....	.....	.....	.....
*Magnolia Petroleum Company	19,850,000	19,650,000	19,500,000	19,200,000	10,000,000
Maritime Oil Company	70,683	80,148	24,847	50,000	90,000
Moutray Oil Company	6,019	4,896	4,362	7,000	.....
Ohio Oil Company	10,312,530	9,666,629	9,375,000	9,250,000	7,000,000
Olney Oil & Refining Company	863	1,313	1,693	6,000	.....
Onyx Refining Corporation	8,755	13,865	10,673	9,000	.....
Pan-American Refining Company	2,854,000	1,722,000	1,871,000	2,220,000	75,000
Panhandle Refining Company	91,595	34,670	97,900	85,000	75,000
Phillips Petroleum Company	7,110,115	5,105,377	5,405,866	5,405,866	.....
Pioneer Oil & Refining Company	4,458	3,059	2,985	4,000	500
Pontiac Refining Corporation	30,792	41,487	47,226	40,000	100,000
Premier Oil Refining Company	16,848	13,653	25,221	25,221	.....
Pure Oil Company	3,844,306	3,754,354	3,921,819	3,939,000	.....
Rado Refining Company	12,658	10,018	7,702	6,000	7,500
Republic Oil Refining Company	1,286,010	872,212	1,317,443	.....	900,000
San Antonio Refining Company	667	.....	.....	.....	.....
Shamrock Oil & Gas Corporation	19,260	40,458	33,443	33,464	28,095
Shell Oil Co., Inc.	6,628,000	5,293,000	6,524,000	6,500,000	3,000,000
Skelly Oil Co.	656,660	272,701	353,591	450,000	.....
Socony-Vacuum Oil Co., Inc.	24,968,000	24,280,000	25,059,000	24,270,000	5,112,000
Southport Petroleum Co.	266,889	86,556	299,475	300,000	100,000
Southwestern Oil & Refining Co.	34,430	60,508	33,975	30,000	.....
Standard Oil Co. of Indiana	35,947,854	28,680,250	29,460,000	30,904,000	22,397,000
†Standard Oil Co. of New Jersey	16,005,000	11,426,000	12,582,000	12,600,000	8,482,000
Stanolind Oil & Gas Co.	1,260,783	920,521	983,232	972,654	500,000
Stone Oil Co.	89	47,153	25,539	25,000	.....
Sun Oil Co.	5,820,000	4,565,000	4,485,000	5,280,000	2,485,000
Taylor Refining Co.	148,000	133,000	130,000	125,000	100,000
Terminal Refining Corp.	180,873	14,887	21,092	.....	.....
Texas Company	25,984,242	22,961,854	23,491,874	26,370,343	4,071,874
Texas Pacific Coal & Oil Co.	35,417	31,505	19,687	25,000	19,687
Tide Water Associated Oil Co.	4,863,000	2,914,000	3,166,000	3,208,000	1,000,000
Valley Refining Co.	4,376	5,333	5,632	5,000	.....
Total	211,925,220	175,919,882	182,781,208	185,910,448	74,310,463

* Included in inventories for Socony-Vacuum Oil Co.

† Includes Standard of Louisiana, Standard of Pennsylvania, Colonial, Beacon, Tuscarora Pipe Line, Oklahoma Pipe Line, and Ajax Pipe Line companies.

Texas commission undecided on proration course to follow

The Texas Railroad Commission late Friday had not determined what procedure it will follow as a result of the decision in the East Texas suits handed down in Austin earlier last week.

Commissioner Ernest O. Thompson expressed the opinion that it would be better to appeal the cases and determine what the law is, while Commissioner Jerry Sadler, on the other hand, favored holding a hearing and writing a new order, because, in his opinion, the commission had no other course to pursue.

See Federal Court Decision on Page 65.

Thompson argued that it would not be necessary for the commission to furnish bond in the cases. He said the court could issue an injunction and permit Humble Oil & Refining Company and Rowan & Nichols to produce at higher rates of flow pending appeal. He saw this as the better plan. Sadler, however, pointed out that the court had indicated bond must be posted and the commission had no fund from which such a bond could be supplied.

Both commissioners were agreed that if the 20-barrel minimum for East Texas wells legally could be preserved, it would be preserved to prevent operators of small leases from going broke.

Plans for a hearing on the question to be held at Kilgore on March 8 were included in the possibilities considered, and if this hearing is held, it promises to be one of the most important that the commission has called for several years. With a hearing in the field, all of the small operators could attend, and besides this, most of the local citizens who are adversely affected by anything that reduces the number of people employed in the oil field would be on hand.

Meanwhile, the commission was casting about for some formula which would comply with the court's decision and yet permit each well to produce a minimum of 10 barrels a day. If the court meant that only a quarter of the proratable oil or about 100,000 barrels could be distributed on a per well basis, this meant about a 5-barrel minimum for all wells in the field. This minimum would become a maximum for wells on extremely small tracts, if the formula now used or any similar formula is continued in effect.

Most of the larger companies had sent their representatives to Austin last week or had called their Austin representatives, to have them determine what the attitude of the commission and the general public toward the court decision in order that they might determine policies for the future.

California rejects state drilling measure

The Phillips bill, which would prevent California to engage in oil and gas development on state-owned lands, was rejected by the legislature last week on a 3 to 2 unfavorable report its oil industries committee.

The bill, rejected because it was too general, was intended to permit state development of the Rio Vista gas field where the state owns the Sacramento River bed, comprising about 15 percent of the field. It was claimed that the state would receive $4,000,000 less the cost of drilling if it engaged in development on its own, whereas the estimated normal royalty return would be $500,000.

No confirmation of reported Mexico-Sinclair settlement

Officials of Consolidated Oil Corporation in New York February 21 had no confirmation that Mexico and Sinclair interests were near an agreement on terms for payment for Sinclair properties expropriated, as outlined in press dispatches February 20 from Mexico City. A. A. Watts, head of Sinclair's Mexican operations, said it was news to him.

The dispatch quoted a Mexican official as stating the properties were worth about $6,000,000 and that the dispute would be settled so far as Sinclair and Mexico were concerned if the deal goes through and that individual settlements would be sought next with Cities Service Companies and Standard Oil Company of New Jersey.

The story continued that terms of the settlement were discussed in Washington February 19 in a conference between Secretary of State Cordell Hull and Mexican Ambassador Francisco Castillo Najera. If such a conference was held, Patrick J. Hurley, representing Sinclair interests in the expropriation dispute, was not present.

The story stated that Sinclair had agreed to end its participation in an alleged boycott of the Mexican petroleum administration.

Wyoming senator covets claims at Lance Creek

Assignment of the "very best" legal talent of the Interior Department to the prosecution of proceedings designed to clear up the status of placer-mining claims on lands in the Lance Creek oil field was urged upon Secretary Harold L. Ickes last week by Senator Joseph C. O'Mahoney (Dem.) of Wyoming.

In a letter to the secretary, Senator O'Mahoney called his attention to the fact that adverse proceedings have been initiated by the department against certain placer claims covering more more than 1200 acres in the field upon which Ohio Oil Company and Continental Oil Company have drilled 15 producing wells, each capable of producing at least 1000 barrels of oil daily.

"This being true," the senator said, "it is obvious that the state of Wyoming and the Bureau of Reclamation are vitally interested in the outcome of the proceedings. It is safe to say, according to my information, that several million dollars in royalties for Wyoming schools and roads and for the development of reclamation are involved. "If it be true, as alleged, that the placer locations on which these claims were based and by virtue of which the drilling has been carried on, were in fact abandoned years ago, it is important that the very best legal talent available to the Department of the Interior be assigned to the handling of the case."

At the Interior Department it was explained that proceedings were initiated last fall by the General Land Office in 31 cases involving approximately 2500 acres, challenging the validity of the alleged claims, which it is contending were unlawfully withdrawn from public lands, and now has under consideration about 40 additional cases.

Claimants to the tracts in the Lance Creek field base their alleged rights on placer mining laws which were enacted many years ago, but were modified in certain respects and particularly as to oil and gas development, by the Mineral Leasing Act of 1920, it was said.

Under the 1920 law, the claimants could maintain their rights under the oil placer laws only if a discovery of oil or gas had been made on the date of the leasing law, or the claimants on that date were engaged in "diligent" prosecution of work leading to discovery and continued such work until discovery was made.

Many of the placer claim holders failed to meet those requirements, it was claimed, and, as a result, Secretary Ickes in 1938 ordered an investigation into the Lance Creek situation. After many months of examination in the field, it was determined that 77 of the claims were invalid.

Officials said that if the placer claims are found to be void, reimbursement to the government for all oil removed will be required. Seven wells are said to have been developed on the areas held by claims which the department contends are invalid, but the volume of oil taken out has not been accurately determined. However, it was said, "preliminary estimates indicate that the proceedings in the Lance Creek area may approach in importance the historic Elk Hills Naval Oil Reserve litigation in California," which resulted in a verdict requiring Standard Oil Company of California to pay the government more than $6,250,000.

Report Soviet blocking Germany oil shipments

Reports from the Polish-Russian frontier suggest that the Soviets are sabotaging shipment of oil and other products to Germany. From various sources it is indicated that the Soviets are doing everything possible to slow up shipments to Germany.

As a matter of record, in normal times 400 to 500 cars per day crossed the border for Poland and other North European destinations, whereas during the past 30 days traffic has been but a small fraction of that.

A press dispatch indicates that not a single oil tank car has gone over the line from Russia to Germany for quite a while. A correspondent in Orasheni states, "It is obvious that the Russians are managing the line and do not allow the Germans to have anything to do with it." Orasheni is two miles inland in Rumania from the Russian border.

It was reported on February 19 that Germany was storing many thousands of tons of Russian oil in Rumania for trans-shipment on the Danube to Germany as soon as the river thaws. In addition, three Russian tankers are docked at Constanza waiting for cargoes, a situation that might be taken to indicate that Russia does not have as much excess oil as reports from officially-controlled Moscow agencies might indicate.

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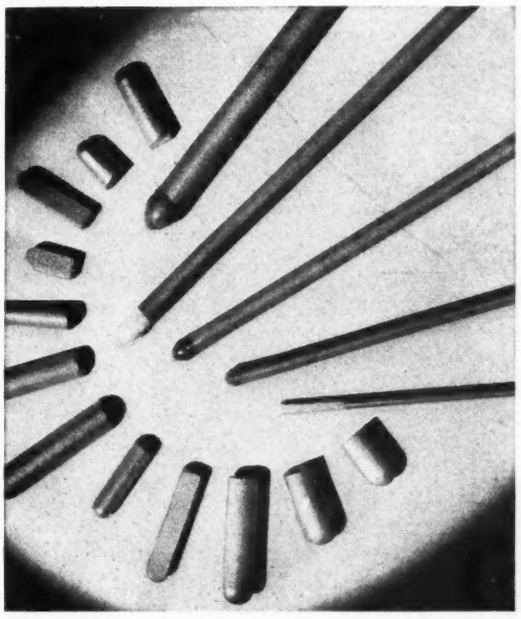
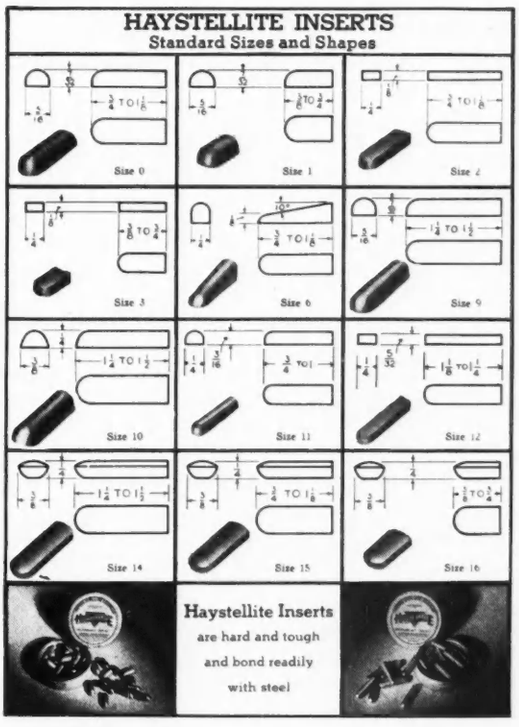


The Haystellite inserts and Haystellite tube rod shown above are about one-half actual size.



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Haystellite inserts are hard enough to resist severe abrasion and tough enough to withstand the heavy impacts encountered in drilling operations. Uniformly high quality of all Haystellite products is assured by close manufacturing control and rigid inspection standards.

When drilling tools are faced with Haystellite tungsten carbide products, they make more footage of out-to-gauge hole per round trip . . . Write for "Haynes Stellite Products in the Oil Fields," which tells how to apply these products for best results. Address Kokomo, Indiana, or the nearest district office—Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, San Francisco, Tulsa.

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P. O. Box 66, Corpus Christi, Te
1501 Arcade Building, St. Louis, Missouri

MEN IN THE INDUSTRY'S NEWS

GEORGE J. MURRAY, JR., assistant to the president of Tide Water Associated Oil Company, has been named director of public relations, a newly-created office of the company. He started as a clerk in the company's Bayonne refinery in 1922, and successively filled various positions until 1930 when he was appointed assistant to the president of Tide Water Oil Company.

PRESTON G. NORTHRUP and Robert G. Carr, San Angelo operators and West Texas representatives of Texas Pacific Land Trust, large owner of acreage in the district, have dissolved partnership, and the former has moved to San Antonio to establish an office in the Milam Building. Carr has been given a new contract to represent the big land owner, with headquarters remaining at San Angelo.

A. W. MONTGOMERY, Socony-Vacuum Oil Company, has been elected president of Kansas Oil Scouts' Association. Charles Wells, Carter Oil Company, is vice president, and Vic Reiserer, National Refining Company, is secretary-treasurer.

CLYDE V. WHITE, Fort Worth division chief civil engineer for Pure Oil Company, has been transferred to Saginaw, Michigan, and will be succeeded by R. R. Reid, who has been stationed at Olney, Illinois.

HENRY ZWEIFEL, president of Cosden Petroleum Corporation, Fort Worth, spent the fore part of last week in New York on a business mission, and was due to make a stop over at Chicago in returning to Texas.

C. W. JONES, field superintendent for Stanolind Oil & Gas Company at Wewoka, Oklahoma, has retired from active service at the age of 65. Jones was at one time field superintendent for Midwest Oil & Refining Company, Salt Creek, Wyoming.

OLIN CULBERSON, former chief of the gas utilities division of the Texas Railroad Commission, has announced his candidacy for commissioner.

HARRY HINES, Wichita Falls operator and a member of the Texas Highway Commission, has announced his candidacy for governor of Texas.

HAROLD G. NEELY, president of Iron Mountain Oil Company, Fort Worth, discussed "Importance of the Oil Industry to Fort Worth and Its Trade Territory—West Texas," before a Fort Worth civic group last week.

S. F. BOWLBY, division manager for Shell Oil Company at Iowa, Louisiana, presented service emblems to employes of the Louisiana division who had been with the company for ten or more years during ceremonies held recently at Lake Charles and at Baton Rouge.

A 20-year emblem was awarded to R. H. Cosby; 15-year emblems were presented to J. R. Fleming, J. B. Thompson and J. P. Williamson, and 10-year awards were made to L. N. Costillow, E. R. Taft, W. J. B. Curless, R. E. Hickman, H. E. McClellan, R. M. Berry, S. F. Bowlby, M. L. Clayton, Lee Spragio, G. W. Treat, H. A. Waldrep and B. Hoskins.

GEORGE J. MURRAY, JR.

E. W. MARLAND last week announced his candidacy for the Democratic nomination for Congress in Oklahoma's eighth district. He became the first Democrat elected to Congress from that district in 1932, and relinquished the office two years later to make a successful race for governor.

R. F. CRAWFORD, Oklahoma City; Harry Cragin, Ponca City, and Paul Reusser, Perryton, Texas, last week organized World Petroleum Corporation with headquarters at Tulsa.

A. C. GALBRAITH, vice president of Union Oil Company, in charge of industrial relations and personnel, has been named president of Petroleum Exhibitors, Inc. The organization has authorized its executive committee to negotiate for space at the 1940 Golden Gate Exposition, San Francisco.

DIED:

RAYMOND A. LeMAY, 38, assistant manager of Independent Exploration Company, Houston, died February 19 of a heart attack at his Fort Worth residence. He had been with the company since 1931, having charge of district offices at Fort Worth and Tulsa. A native of Sherman, Texas, he engaged in seismograph work for Gulf Oil Corporation in West Texas when geophysical operations were first introduced into the latter district.

J. L. SULLIVAN, 58, telegraph operator for The Texas Pipe Line Company, died February 21 in Houston.

Flournoy, W. W. Gaines, T. S. Haywood, C. R. Hudson, F. R. Lovering, J. L. May, F. P. McIntyre, R. N. Myers, W. F. Rickards, E. H. Sheridan, T. V. Venator, C. H. Wingate, R. N. Bales, C. G. Bartholomew, Julien Bolotte, J. R. Crochet, G. W. Earle, W. A. Ellexson, A. W. Gauthreaux, J. K. Hensley, Lionel LeBlanc, J. T. Mercer, Jr., A. Parker, W. W. Ponsano, J. R. Prather, W. J. Ramagos, G. G. Roberson, W. L. Rushing, C. R. Schriber, H. F. Simmers, L.

Officers of the Mississippi Geological Society, shown on a recent field trip, are (left to right) Urban B. Hughes, consulting geologist, vice president; Henry N. Toler, Southern Natural Gas Company, president, and Tom McGlothlin, Gulf Refining Company, secretary-treasurer.

Markets steady despite some price lowering

Although the industry's markets have not undergone any material change in the past 10 days, there has been some further weakening of gasoline prices, and quotations on lubricants have been lowered in some instances.

The crude oil markets, meanwhile, remain generally firm. There is some possibility that California crude postings may be restored to the levels from which they recently were reduced, as several major companies have raised fuel oil prices back to former levels.

Reports from Illinois indicate that under-market selling of crude in that flush state has diminished, and that the spot price has advanced 10 cents a barrel, being now only 5 to 7 cents a barrel under the posted price of $1.05.

This strength of the Illinois market is particularly noteworthy, in view of the fact that the state's crude production has risen above 400,000 barrels daily, to the highest levels so far reached.

Gasoline Prices Reduced

The instability of the gasoline market was reflected during the past week when Standard Oil Company of Ohio made two reductions of tank wagon and retail prices on two successive days, February 19 and 20, at Toledo. The first reduction amounted to ½ cent a gallon in tank wagon prices and 1 cent retail; and the second lowered prices another ½ cent.

The weakness of gasoline prices is due primarily to the surplus stocks of that product and the prospect that further large additions will be made.

PRODUCT PRICES

	Range Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
62 octane and under	3¾	4⅛	...	...
63-66 Octane	4	4⅜	...	...
67-69 Octane	4⅛	4¾	—⅛	...
70-72 Octane	4¼	5	—¼	...
Mid-Western Tank Car:				
62 Octane and Under	3¾	4¼	...	—¼
63-66 Octane	4	4⅛	...	...
67-69 Octane	4¼	4¾	...	...
70-72 Octane	4½	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F. O. B. Group 3	2	...	...	...
F. O. B. Breckenridge, Texas	1¾	...	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3¾	4¼	...	...
42-44 water white	3⅞	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	3¾	4¼	...	...
42-44 water white	3⅞	4⅝	...	...
FUEL OILS				
Mid-Western Tank Car:				
Range Oil	3¾	4	...	...
Gas and Fuel Oils:				
No. 1 Prime White	3¾	3⅞	...	...
No. 1 Straw	3⅝	3¾	...	...
No. 2 Straw	3½	3⅝	...	...
No. 3	3⅜	3½	...	...
No. 5 (per bbl.)	65	70	...	...
No. 6 (per bbl.)	50	55	...	...

The gasoline inventory reached a new all-time peak of 93,985,000 barrels in the week ended February 17, and it is indicated that stocks may go to 105,000,000 barrels by March 31 if storage tanks will hold that quantity; although the industry could operate satisfactorily with as little at 82,000,000 barrels, in the opinion of most petroleum economists.

Forecast for March

The Bureau of Mines in its forecast for March stated that additions to stocks above normal storage may represent about one-third of a possible 5 to 6 percent increase in domestic demand for gasoline during 1940, and that the absorption of the added stocks would have to involve either a postponement of the usual seasonal increase in runs or some reduction in normal gasoline yields, or both.

Gasoline export trends still are materially below the high levels of a year ago, the bureau pointed out; and the reduction of gasoline stocks will be a major problem in the second and third quarters of this year. The bureau estimated that domestic demand for motor fuel would be 45,100,000 barrels in March, an increase of 6 percent over the actual demand of 42,520,000 barrels in March, 1939. The estimate for exports of 3,400,000 barrels was, however, almost a million barrels less than the actual exports of 4,336,000 barrels for March, 1939. The bureau's estimate of total demand for gasoline in March, 1940, indicated an increase of 3.5 percent over the combined domestic and foreign shipments in March, 1939.

Refiners Lower Quotations

Further reductions of quotations on gasoline occurred last week at Oklahoma refineries. Particularly affected were the higher octane grades, which were offered at some plants for ¼ cent a gallon less than previously. In contrast, however, prices were firm at refineries in West Texas, East Texas, and North Louisiana, where supplies were reported to be limited.

In the Chicago marketing territory, prices of gasoline were generally unchanged during the past 10 days.

Kerosene and Fuel Oils

Kerosene and the heating oils have continued in strong demand, and no important changes have occurred in quotations by refiners of the Mid-Continent or by resellers. However, the exceptionally heavy demand for fuel oil in the past month is reported to have eased off a little in some areas, as along the Atlantic coast, and scarcity of supplies has become less acute.

The heavy fuel oils also appear to be available in somewhat more ample quantities, following the large refinery runs of recent weeks which finally have stopped withdrawals from storage. The stocks of the heavy oils possibly reflect, also, some slight slowing down of the country's industrial activity since the beginning of the year. Nevertheless, inventories of these oils remain comparatively small, in relation to the

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[5]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[9]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[1]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3.545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 6	3,584,450	3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
January 13	3,592,200	3,520,000	238,249,000	84,326,000	30,326,000	104,712,000
January 20	3,637,450	3,510,000	237,571,000	85,180,000	28,888,000	104,582,000
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 3	3,498,800	3,395,000	239,380,000	89,337,000	26,861,000	102,536,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	102,344,000
February 17, 1940	3,717,950	3,570,000	.....	[1]93,985,000	25,876,000	103,424,000
February 18, 1939	3,324,300	[8]3,027,000	[4]270,753,000	83,075,000	30,206,000	114,061,000
Change in past year	+11.8%	+18.0%	+11.6%	+13.3%	—14.3%	—9.3%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, February 11, 1939. [5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] February, 1939, daily average. [9] Lowest since October, 1922, due to the shutdown of six Mid-Continent states.

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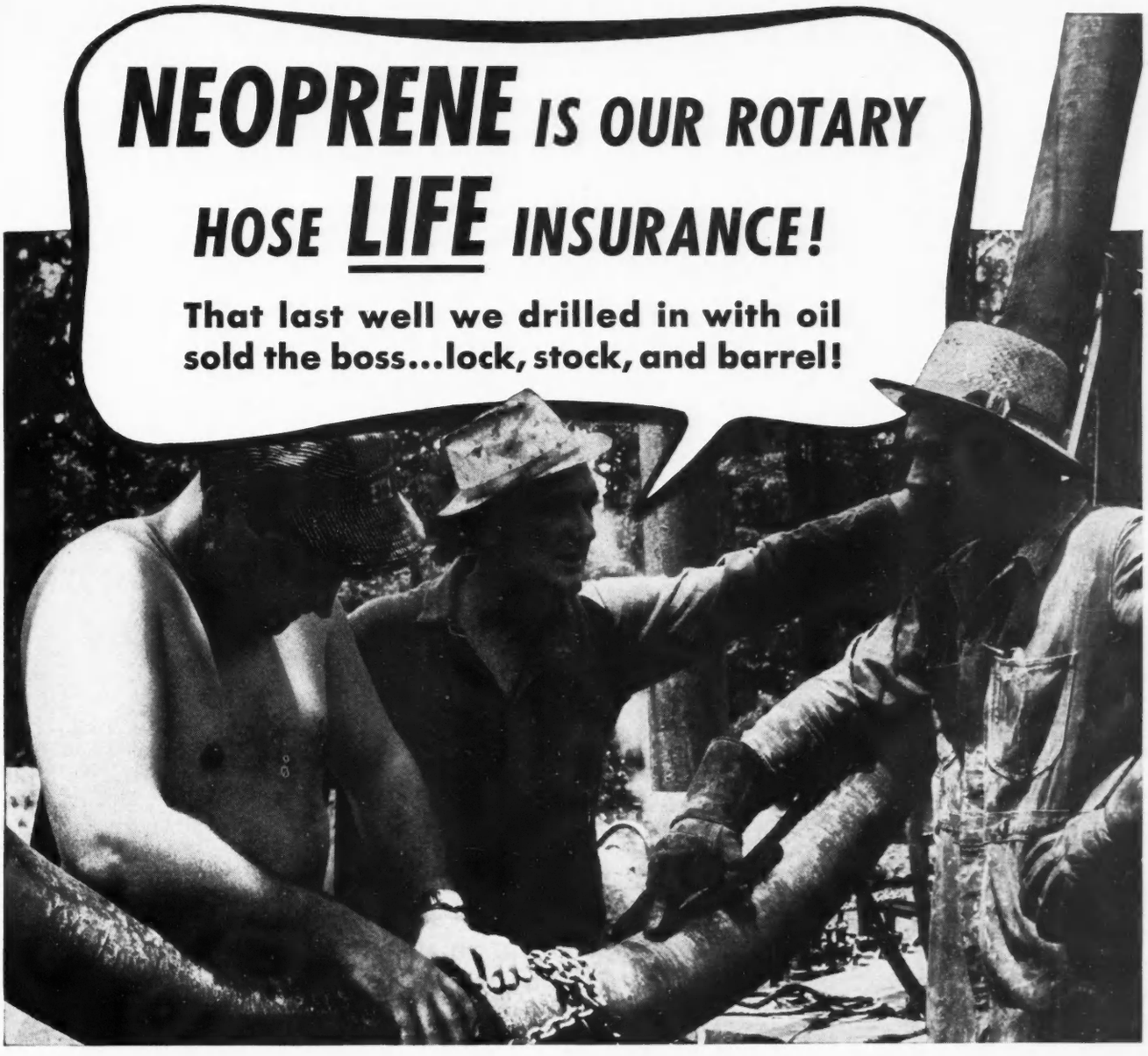

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Lubricants Ease Off

Lubricants have become somewhat more readily available in the Pennsylvania area as well as in the Mid-Continent, and in some instances, refiners have lowered quotations in order to obtain orders. However, many refiners still are sold up for some weeks ahead, and new orders are coming in in good volume, indicating that no material letdown of the market is likely in the near future.

Crude production and runs at high levels

Both crude oil production and refinery runs were increased in the week ended February 17, latest statistics of the industry disclosed; and in consequence, gasoline production was enlarged and over 2,000,000 barrels more of that product went into already bulging storage, establishing a new all-time record for gasoline stocks.

Nevertheless, the refineries did not turn out as much heating oil as the markets absorbed, with cold weather continuing to make heavy demands on suppliers; and further withdrawals from storage were necessary.

Stocks of heavy fuel oils, however, were increased, as output at refineries exceeded current market demand.

Production and Runs

United States crude oil production rose approximately 30,000 barrels daily in the week ended February 17, according to the American Petroleum Institute, having averaged 3,717,950 barrels daily. That was about 190,000 barrels a day more than the average daily market demand for February, as estimated by the Bureau of Mines. It was 11.8 percent more than the output in the corresponding week last year.

Crude runs to stills were increased 110,000 barrels daily, to 3,570,000 a day, and were 18 percent greater than the average daily runs in February of 1939.

Gasoline Situation

Stocks of finished and unfinished gasoline in the United States rose 2,336,000 barrels, to a record high of 93,985,000 barrels. The previous peak was 93,192,000 barrels, reached in the week ended March 19, 1938. The present stocks are more than 13 percent larger than those held at this time last year, whereas demand for gasoline has been running less than 5 percent above the levels of a year ago.

The large addition to stocks in the week of February 17 resulted in part from the further expansion of gasoline production at the refineries. Output for the seven days was 346,000 barrels greater than in the previous week, an increase of about 50,000 barrels in the daily average.

Fuel Oils

Stocks of gas oil and distillate fuel were further reduced 131,000 barrels, as they came down to 25,876,000 barrels, a level 14.3 percent lower than that one year previously. Demand for these light oils, in contrast, has been running more than 10 percent higher than a year ago.

Inventories of residual fuel oil were increased a little over a million barrels, from 102,344,000 to 103,424,000 barrels. The increased refinery output of this product was more than the markets would absorb, especially with industrial activity lagging lately.

Stocks of crude oil showed a small increase in the week ended February 10, despite heavy runs to refinery stills, having risen from 239,380,000 to 239,510,000 barrels.

Texaco builds gasoline line in Illinois-Indiana

Lawrence Pipe Line Company was organized last week as a subsidiary of The Texas Company to construct and operate a 55-mile gasoline pipe line from Lawrenceville, Illinois, to Evansville, Indiana. The line will give the company a water terminal on the Ohio River. Surveyors have started work on the project.

Levelland refinery resumes

Midland, Texas.—Operation of the Motor Fuels Corporation's refinery at Levelland, Texas, was to be resumed late last week under a trusteeship, thereby assuring producers in the Slaughter, Duggan and Dean fields a market outlet for their production in the north portion of the West Texas Permian Basin. Ira Butler, Fort Worth attorney, was appointed trustee through voluntary court action taken by stockholders and creditors pending re-organization of the company.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand February	State Allowable in Feb.	BARRELS DAILY FOR WEEK ENDED Feb. 24	Feb. 17
TEXAS—				
Texas Panhandle	.....	.....	76,500	82,700
North Texas	.....	.....	98,950	95,900
West Central Texas	.....	.....	32,300	36,050
West Texas	.....	.....	225,700	220,350
East Central Texas	.....	.....	80,100	88,500
East Texas Field	.....	.....	399,450	406,800
South Texas	.....	.....	224,500	217,300
Texas Gulf Coast	.....	.....	237,900	240,150
Total Texas	1,371,400	1,390,150	1,375,400	1,387,750
CALIFORNIA—				
Long Beach	.....	.....	44,500	44,600
Midway-Sunset	.....	.....	46,500	56,600
Kettleman Hills	.....	.....	54,200	53,700
Wilmington	.....	.....	81,800	82,200
Others	.....	.....	373,200	386,700
Total California	585,900	594,000†	600,200	623,800
OKLAHOMA—				
Oklahoma City	.....	.....	99,100	99,800
Seminole Area	.....	.....	102,650	103,150
Others	.....	.....	221,750	225,400
Total Oklahoma	429,000	429,000	423,500	428,350
ILLINOIS—				
Salem	.....	.....	255,300	245,300
Louden	.....	.....	76,500	69,850
Other New Pools	.....	.....	77,250	76,050
Old Pools	.....	.....	7,800	8,000
Total Illinois	325,500	.....	416,850	399,200

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand February	State Allowable in Feb.	BARRELS DAILY FOR WEEK ENDED Feb. 24	Feb. 17
LOUISIANA—				
North Louisiana	.....	.....	68,750	69,000
South Louisiana	.....	.....	210,200	209,300
Total Louisiana	252,800	273,250	278,950	278,300
KANSAS	155,500	165,000	173,200	176,700
NEW MEXICO	100,300	113,000	113,100	113,500
EASTERN STATES—				
Pennsylvania Grade	.....	.....	76,650	77,000
Others, Eastern	.....	.....	22,500	23,000
Total Eastern States	108,900	.....	99,150	100,000
MOUNTAIN STATES—				
Wyoming	55,200	.....	66,700	69,200
Montana	15,200	.....	16,900	16,900
Colorado	4,100	.....	5,050	5,300
Total Mountain States	74,500	.....	88,650	91,400
MICHIGAN	64,500	65,000	65,000	65,100
ARKANSAS	60,000	70,000	69,200	69,600
MISSISSIPPI	.....	.....	7,250	5,250
NEBRASKA	.....	.....	0	0
*Total 8 Prorated States	3,019,400	3,099,400	3,098,550	3,142,100
Total United States	3,529,000	.....	3,710,450	3,736,950

† Recommendation of Central Committee of California Oil Producers.
* Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Michigan, Arkansas.

Illinois

Devonian proven in south end of Lake Centralia-Salem field

Centralia.—Devonian development in the south part of the Lake Centralia-Salem field of Marion County was assured last week when Hollingsworth & Bander set casing at Kalkbrenner 11, a test drilled on a 16-foot strip in SW 5-1n-2e. Devonian lime was topped at 3341 feet and saturation cored at 3410-17 feet.

A directional survey showed bottom of the hole 1 1/27 feet off center, a fact considered unusually interesting by operators. In a law suit a year ago The Texas Company claimed wells on the strip were bottomed on adjoining acreage, more than eight feet off center. The Texas Company lost the suit.

Another highlight of the week was moving in of materials for The Texas Company's Norman Davis 1, NW NE NE 21-1n-2e, 4 miles south of Devonian production and ¾-mile south of shallow production. Best completion of the week in the field was The Texas Company's Freisner 17, SE NW 32-2n-2e, rated at 7052 barrels a day after it flowed 894 barrels in 3 hours following an acid treatment.

Deep production in the Centralia townsite field was extended several blocks north when Louis Lilly's Williams 1, SE SE 12-1n-1w, flowing 93 barrels an hour after acid treatment in pay topped at 2908 feet. It was estimated as at least a 2000-barrel well, and was considered by far the best completion in the field to date. A south outpost, Paul Doran's Roethemeyer 1, SE SE SE 13-1n-1w, flowed 203 barrels initially after a 3000-gallon acid treatment.

A Wabash County wildcat near Mt. Carmel, Henry Mode et al's Keneipp Heirs 1, SE SW SE 19-1s-12w, cored a show of oil at 2371-76 feet and was scheduled to run an electric survey. The formation had not positively been identified.

The second producer in the new southwestern White County field, W. C. McBride's Ozonia Johnson 1, SE NW NE 25-6s-8e, flowed 215 barrels in 5 hours from Hardinsburg sand to stimulate activity in that area. Bottom is at 2433 feet. The pool is the first in Illinois to produce from the Hardinsburg sand, a member of the Chester series. The formation is just below the Glen Dean, and above the Golconda and Cypress.

Superior Oil Company's Hocking 1, C NE SW NE 20-2s-13w, 1½ miles south and west of Keensburg, also in Wabash County, has cemented casing to McClosky saturation. It is two locations north and east of Continental Oil Company's Albert Gray 3, NW SE 20-2s-13w, which made 77 barrels in its initial 24 hour test to give the area its first McClosky production. North and east of Keensburg, Burr Lamber's Buccholz 1 was estimated good for 100 barrels a day in Cypress sand. The test is a farmout of Tidewater Associated Oil Company which drilled a dry hole to the McClosky on the same tract a year ago.

Pure Oil Company's Devonian test in the Cisne field of Wayne County, Stella Billington 3, E½ SE NE 27-1n-7e, was drilling at 4900 feet, less than 400 feet from the anticipated depth of Devonian pay. The venture may be carried to the St. Peter if the Devonian is not commercially productive.

Indiana

Bad weather retards activity; new starts at 10-year low

Evansville.—Indiana activity was almost at a standstill last week as bad roads and muddy locations held up operations. For the first week in two years there were no new first reports.

Among the few completions was Stanolind Oil & Gas Company's Wells Estate 1, 5 miles west of Greencastle, Putnam County, NW NW NW 15-14n-5w. It was abandoned after 1000 gallons of acid in the Trenton, from 1940 to 1970 feet, yielded only a scum of oil. Total depth was 2829 feet.

In the southwestern Griffin field area, Continental Oil Company set casing at 2781 feet to test Aux Vases, topped at 2784 feet, in Keck 5, SE SE SW 27-3s-14w, Gibson County. Still waiting on weather to drill in and test the Cypress sand was the company's Keck 4, SE SW SW 26-3s-14w.

A failure in the McClosky, but plugged back and now waiting on cement with casing set at 2570 feet to test 10 feet of saturation in the Cypress, was Joe Minton and D. M. Hollingsworth's L. P. Hill 1, NW SE NW 7-4s-13w, wildcat southeast of Griffin, Posey County.

About four miles east of Gibson County's new pool-opener in the McClosky (Harry Fotiades' Perry Fleener 1, southwest of Owensville) Art Braden is down 2490 feet in George Simpson 1, Union Township, SE NE 19-3s-11w.

In German Township, Vanderburgh County, John R. Knapp was drilling at 500 feet in Louis Nagle 1, wildcat in NW NW SE 8-6s-11w.

Dry and abandoned was another Vanderburgh County wildcat. In Center Township, John L. Drake's Barbara Seib 1, SW NW NW 23-5s-10w, was drilled to 1450 feet. A cable tool test, it was abandoned when the top of the Mansfield sand showed only salt water.

Topping developments in the Wabash County, Illinois, side of the Griffin field was Continental Oil Company's Albert Gray 3, NW SE SW 20-2s-13w, which initialed 77 barrels in 24 hours from the McClosky, a horizon new to that immediate territory, about 2 miles southeast of Keensburg. North and east of this test, Superior Oil Company was setting casing for another McClosky test, the Hocking 1, NE SW NE 20-2s-13w.

Sinclair Prairie Oil Company's Howard 1, Montague County, Texas, made 165 barrels its first hour. **(See page 80)**

Oklahoma

Kay County wildcat swabs oil after shot in Prue

Tulsa.—New pool designation was indicated for Malarnee Oil Company's Harris 1, C SW NE 14-26n-1e, 2 miles west of Ponca City pool, Kay County. Two trips with a swab recovered 30 barrels. Prue sand at 3760-86 feet was previously shot in two stages with 75 quarts.

Burke-Greis Oil Corporation and Zephyr Drilling Company encountered a good show of oil in the Dutcher sand at 2819-25 feet at Brown 1, NE SE SE 19-16n-10e. Seven-inch casing has been cemented at 2813 feet. The test is between the Slick and Bristow fields, Creek County.

Another Creek County semi-wildcat, Midco Oil Corporation's Bruner 1, CNL NW SW 29-17n-11e, south of Sapulpa, gauged 3,146,000 cubic feet of gas from Taneah sand at 2240-70 feet. Pay was topped at 2167 feet, and hole carried to 2410 feet.

Two Logan County wildcats were drilling while one in Lincoln County was a failure in second Wilcox sand. George Travis et al's Teter 1, NWc SW 24-17n-2e, on an anticlinal trend between Coyle and Sporn pools, was shut down in dry sand at 4771 feet. First Wilcox sand was also dry at 4732-57 feet. Helmerich & Payne et al's McMahon 1, SWc SE 31-17n-1e, 1 mile north of South Langston pool, Logan County, topped Cleveland sand high at 4215 feet and was below 4650 feet. Same operator's Kramer 1, NWc SW 24-17n-1e, 2 miles south of Coyle pool, was below 3850 feet.

Starr Oil & Gas Company's Bowlby 1, SWc NW 29-5n-4e, 4 miles west of Beebe pool, Pontotoc County, failed to find commercial shows and will abandon at 2908 feet in Wilcox sand, topped at 2890 feet. This wildcat had the attention of operators when it checked around 295 feet high on the Simpson dolomite at 2735 feet. Three dry holes have been made in the area.

Continental Oil Company was constructing derrick at State 1, C NE 16-8n-16w, a deep wildcat project southeast of Cordell, Washita County.

Two new tests have started in Byars pool, McClain County, and another producer is expected. Simpson-Roodhouse Drilling Company was erecting derrick at James 3, SEc 9-5n-3e. Benedum & Trees staked location for James 1, SWc NE SE 9-5n-3e, eighth start for the pool. Patsy Oil Company's Richardson 2, NE SW SE 9-5n-3e, ran casing after drilling to 3647 feet.

The Texas Company deepened Carr 2, C W½ NW NE 12-17n-1e, Coyle pool, Payne County, to 4954 feet for salt water disposal.

Johnson Drilling Company's Longacre 1, NEc SE 32-2s-17w, south of Frederick District, Tillman County, were testing a show of oil in Canyon lime at 2998-3013 feet. A. A. Wisdom staked Dolen 1, NWc NE 15-1s-8w, a wildcat southwest of Duncan, Stephens County. Wisdom has a 3000-acre block surrounding the well site.

Phillips Petroleum Company's Beeker 1, NE NW SW 8-5n-10e, semi-wildcat in Calvin area, Hughes County, flowed 2 barrels of oil from Cromwell sand and went dead. After perforating with 20 shots at 4485-90 feet, the swab recovered 25 barrels of oil and 173 barrels of water in 10 hours with an estimated 2,000,000 cubic feet of gas. Perforations are in lower Cromwell sand from a plug-back depth of 4547 feet.

Two miles northeast of Spaulding pool, Hughes County, Tom Nix et al's Warren 1-A, SEc 4-6n-8e, reported a good show of oil in Allen sand at 923-30 feet but a bad cement job delayed testing.

WHAT PORTABLE RIG

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?

SEE PAGE 82

Kansas

Extension tests hold spotlight; Russell wildcat shows good

Wichita.—Aylward Production Company completed a ¼-mile extension test to East Big Creek pool, Russell County. Rusch 1, SW SE SE 30-14-14w, made an initial potential of 76 barrels daily from a lime horizon in the Kansas City drilled to 2937 feet. Same operators also confirmed extension of Otis-Albert pool, Rush and Barton counties, at Bird 1, C SE NW 33-18-15w, 1¾ miles east of production. The test swabbed 61 barrels per day from Reagan sand at 3510 feet.

A half-mile southward extension was indicated for Krier pool, Barton County. The Texas Company's Janssen 1, CEL NE SE 31-16-11w, cored saturation in Arbuckle lime at 3330-32 feet and ran casing to test.

Ray Webb and Earl Wakefield's Schmidtberger 1, C N½ NE SW 17-13-15w, wildcat 2½ miles north of Gorham pool, Russell County, ran casing to 3312 feet to test a good show of oil in Arbuckle lime. Lansing lime was topped at 3048 feet and 6-inch cemented at 3050 feet.

Simpson Oil Company's Kruse 1, CEL NE NW 20-17-9w, ½-mile northeast of Wilkens pool, encountered sulphur water at 3270 feet in Arbuckle lime. The test was abandoned. Cities Service Oil Company's Padlena 1, SEc 26-14-10w, 10 miles north of Stoltenberg pool, pumped 7½ barrels of oil and 100 barrels of water in 24 hours. Lansing lime was shot with 24 perforations at 2833-37 feet and acidized with 3000 gallons. A squeeze-cement job failed to shut off the water. Southeast of this pool 1½ miles, Lauck & Moncrief et al's Ehler 1, CWL SW NW 35-16-10w, topped Kansas City lime at 2848 feet and was drilling below 3155 feet. This wildcat is running structurally higher than Phillips Petroleum Company's Sturn 1, SEc NW 36-17-10w, 2½ miles southeast of production, which was abandoned in dry Arbuckle lime at 3335 feet.

Cities Service Oil Company's Victory 1, CWL NW 36-13-30w, 6 miles southwest of Gove, Gove County, topped Arbuckle lime at 4615 feet and the bit was rotating below 4650 feet with nothing showing.

Gulf Oil Corporation's Redetzke 1, SEc NE 19-16-11w, ½-mile west of Prusa pool, Barton County, was bailing below 3200 feet after a show of oil was picked up in Arbuckle lime at 3333-37 feet. Hinkle Oil Company et al's Burmeister 1, CWL NW SW 27-16-11w, ½-mile east of Prusa, had a hole full of oil in 20 hours. Arbuckle lime has been penetrated to 3365 feet. Two wildcats were staked in the county. Darby Petroleum Corporation made location for Bitter 1, C N½ NW NE 5-16-13w, ½ mile from Trapp pool. Alpine Oil and Royalty Company et al's Petz 1, C E½ NW SE 7-20-11w, ½-mile from Ellinwood West pool, was rigging up.

Alliston & Talbott's Zink 1, SEc NE 32-29-5e, 3½ miles southwest Fox-Bush pool, Butler County, was abandoned when sulphur water entered the hole at 3324 feet in Arbuckle lime. Rex & Morris moved in a machine at Towle 1, SE NE 20-26-7e, near Young pool, Butler County.

C. L. Carlock et al's Daniels 1, SWc NE 22-30-4e, 1 mile south of Rock pool, Cowley County, was a location. Morgan Petroleum Company have pits at Dunn 1, SWc SE 2-35-5e, 4 miles south of Rahn pool. Pitt Brothers are drilling at Clark 1, C SW NE NW 21-28-4e, near production in the old Augusta pool, Butler County.

Roth Oil & Gas Company's Gretsinger 3, SW NE NE 15-31-4e, Sherwood pool, Cowley County, retested and acidized Arbuckle lime at 3463-66 feet with 500 gallons. In 3 hours it flowed by heads 310 barrels, cutting 10 percent water.

A. M. Landon was drilling below 1900 feet at Coen 1, NWc NE 15-23-14w, northwest of St. John pool, Stafford County. In the same county, Trigg & Allen's Helmers 1, C W½ NW SE 2-22-12w, ¼-mile southeast of South Sittner pool, has a rotary derrick up.

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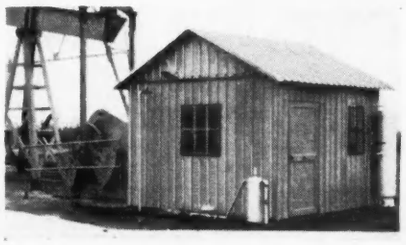

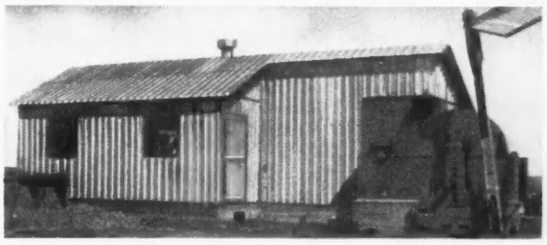

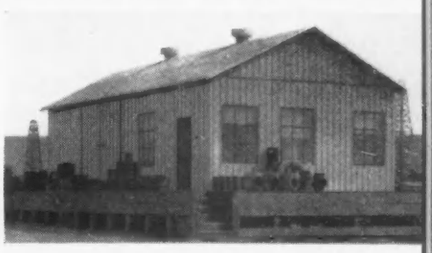

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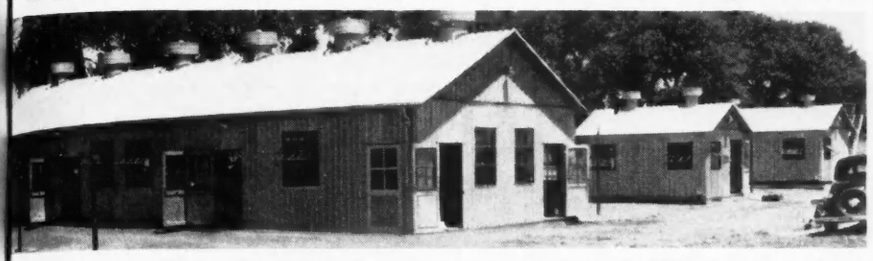

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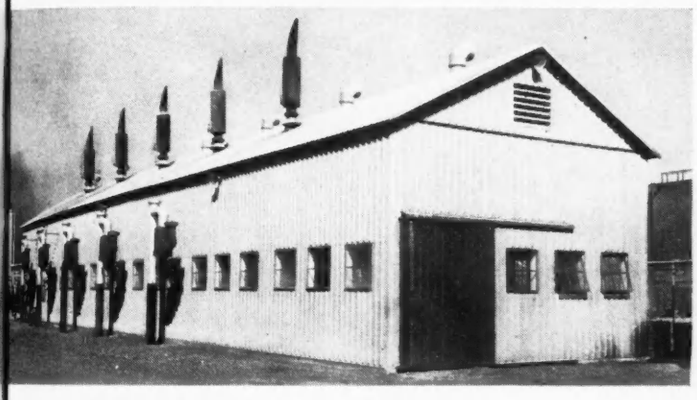

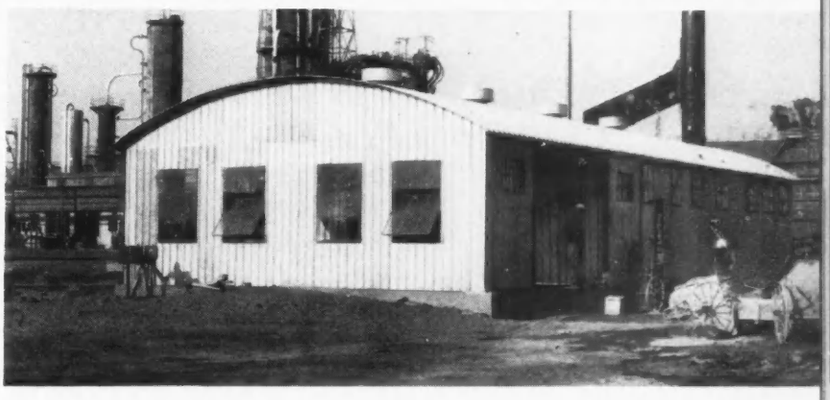

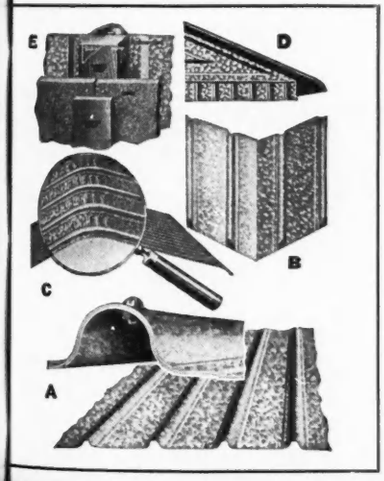

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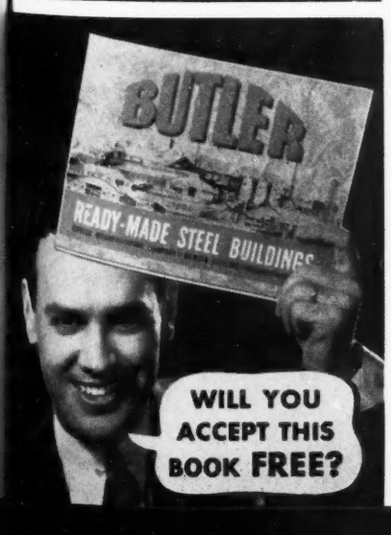

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West Texas

Ordovician wildcat in Pecos showing probable production

Midland.—An Ordovician wildcat in northern Pecos County was being watched last week-end as a prospective discovery after passing up a fair showing of oil and gas to try for saturation in the Ellenberger. Formation tester used by Humble Oil & Refining Company's Bertha Young 1, C N¼ W¼ H&GN Section 33, Block 10, in broken lime and shale at 4982-5190 feet yielded 930 feet of rotary mud that was cut by oil and gas. Top of the Ordovician has been tentatively placed at 5185 feet, or 2730 feet sub sea. The wildcat was coring lime with streaks of shale at 5240 feet toward end of week.

Skelly Oil Company's J. S. Masterson 1-J, fourth oil well for the Apco deep pool, Pecos County, increased its flow to 445 barrels of 42-gravity oil in 7 hours through ¾-inch choke after using 10,000 gallons of acid at 4562-4616 feet in Ellenberger, topped at 4560 feet, or 2123 feet below sea level. The performance of this southwest extension well is ample to cause adjacent lease owners to drill the normal offsets.

Search for production in the Holt, or Clear Fork lime section of the Lower Middle Permian sustained a second reversal when Landreth Production Corporation and Shell Oil Company's Johnson 1-A, Ector County wildcat between the Foster and Goldsmith field, indicated water at 5215-33 feet. The best bid for oil production was at 5208-10 feet, where oil-bleeding core with fair porosity was pulled, but the thickness is not adequate to make a well. Noticeable thinning of shale beds that overlie the Holt lime occurred as sticky shale was logged at 5111-55 feet, with an elevation of 3046 feet. This shortening of the section made it possible for Johnson 1-A to enter the deep lime zone and also the water level at a surprisingly close sub-sea depth as that recorded by the 4 deep producers on the west edge of the North Cowden field.

Stanolind Oil & Gas Company's W. F. Cowden 1, latest deep well for the North Cowden structure, increased its oil yield to 99 barrels on 14-hour swabbing test after 3-stage acid treatment with 7000 gallons in broken pay at 5164-5215 feet. Small volume of water at 5223-37 feet was excluded by plugging back to 5215 feet. Landreth Production Corporation's T. P. Land Trust 2-A, 1½ miles southeast of nearest deep production, was drilling at 4440 feet, having encountered no difficulty in conditioning hole to deepen from a plugged-back depth of 4248 feet to try for the Holt pay. The company purchased lease on SE T&P Section 33, Block 43, T-1-N, northwest offset to its test, from T. P. Land Trust for $12.50 per acre cash and $100 per acre out of oil before starting the deepening operation.

Magnolia Petroleum Company's George Sealy 3-43, ⅓ mile southwest of its gas discovery on a reef type structure in Ward County, encountered light gas shows from upper lime and sand in drilling to 2796 feet. Top of Yates was called at 2587 feet, indicating a favorable structural position. The company's Sealy 2-43, which was rated at 61,000,000 feet of gas with spray of oil on completion test, has an actual open flow yield of 2,500,000 feet of gas daily, according to a re-test. Gulf Oil Corporation's Wristen 5, projected Ordovician test for the Shipley area, was drilling at 4530 feet.

North Texas

East Montague wildcat strike rates live before official gauge

Wichita Falls.—Eastern Montague County recorded a prolific oil strike from the Bend lime section on February 21 that has possibilities of embracing a large area, based upon supporting geophysical information. The discovery was made by Sinclair Prairie Oil Company's A. P. Howard 1, ¾-mile west of the town on Bonita, with a natural flow of 425 barrels of 39-gravity oil in 3 hours through casing from broken sand and granite wash at 5241-49 feet. The well flowed 165 barrels the first hour after cleaning itself in pits, followed by 125 barrels and 135 barrels the next 2 hours. Gas volume was rated at 2,700,000 feet daily. The well was placed on choke after the third hour, then shutin when 1000 barrels of tankage was filled.

Centering upon a 1600-acre lease block taken after seismograph surveys revealed a high on the deep-lime formations, Howard 1 failed to offer any encouragement for production in the Canyon and Strawn series, other than a nominal oil-stained sand at 4726-32 feet that did not warrant testing. Top of Bend lime, which is also referred to as the Caddo in the district, was called at 5151 feet. Seven-inch pipe was cemented at 5240 feet after the well showed for flowing production when drill-stem test was made at 5241-49 feet. Location is 1480 feet north and

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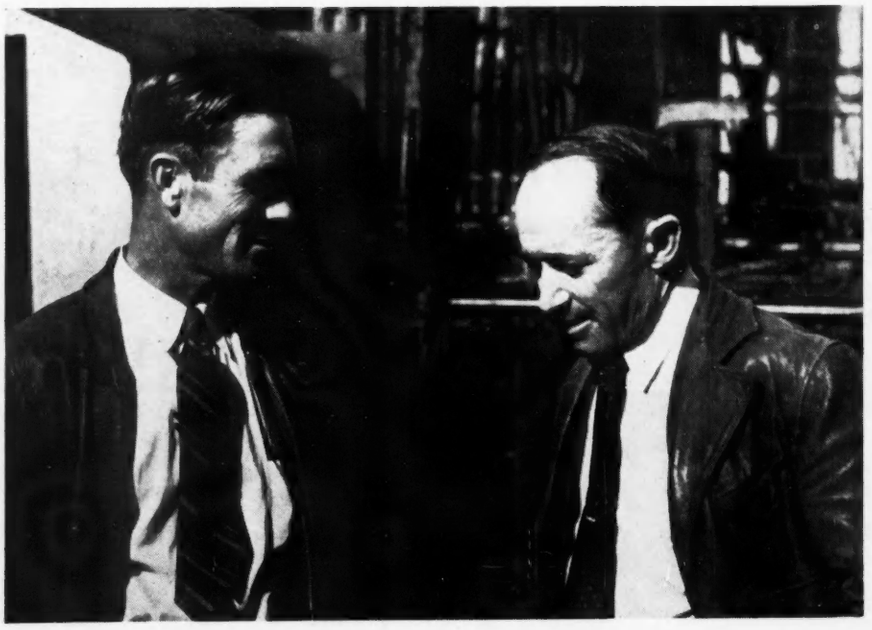
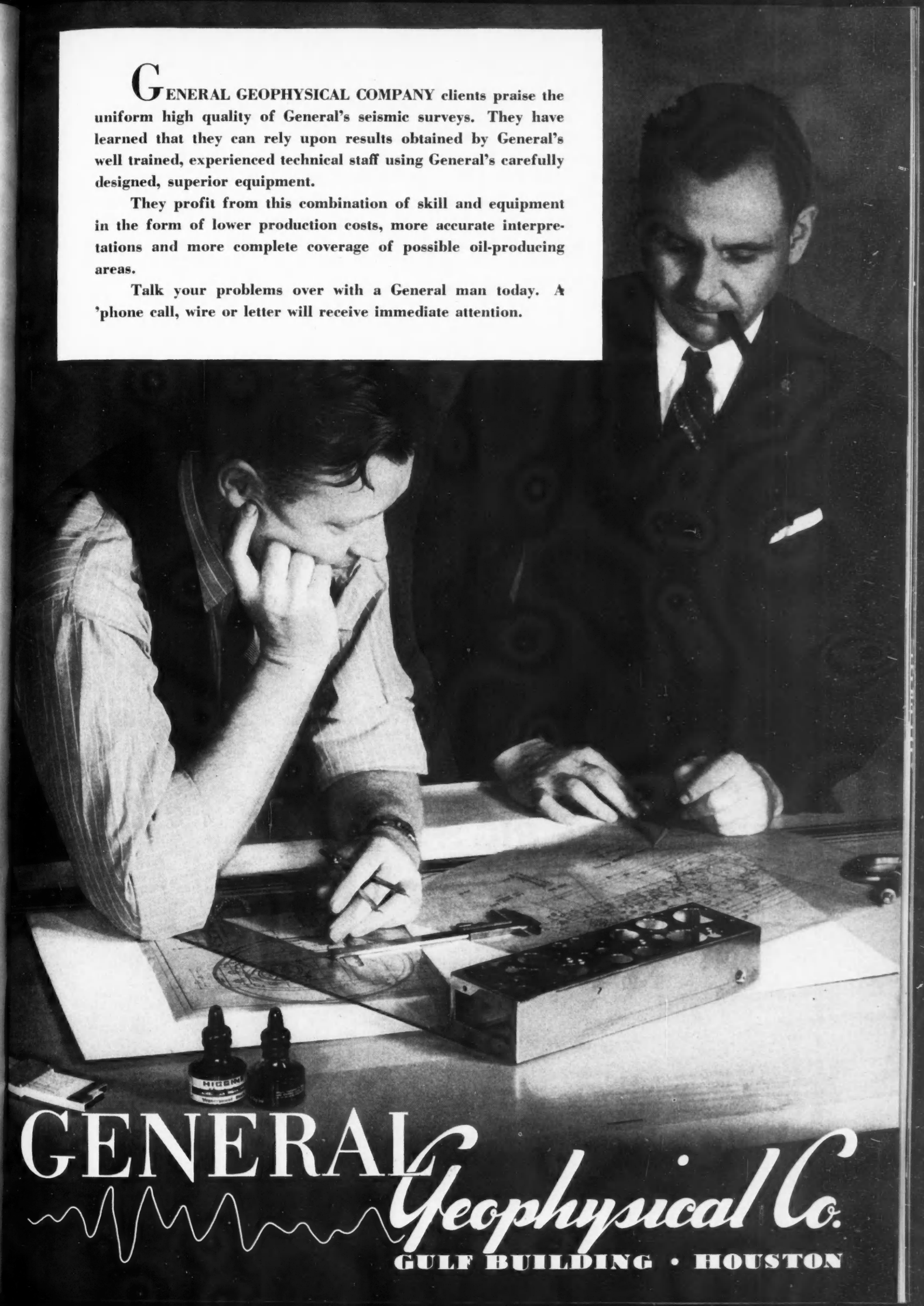


Jim Adkins and Dick Barnett, driller and contractor, discussing possibilities of a Montague County well, rated good enough to start a pipe line before really tested.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420 feet east of the most westerly southwest corner of a 108.37-acre tract, and W. Wallace Survey, A-841. It is 3 1/3 miles southwest of the Bowers pool, which produces from the 2900-3400- and 3900-foot Strawn zones, with a granite ridge defining production on the east. E. B. Madden et al's Harry Smith 1-a, H. N. Baker Survey, A-49, a 4748-foot failure on a strike between the Bowers and Bonita deep well, is 204 feet higher on surface than the latter, and may be deepened.

Preliminary analysis of the crude from the Bonita well shows a trace of sulphur, but probably not of sufficient volume to cause it to be classed as sour oil. The gasoline content is estimated at 33½ percent at 400 end point.

Early line outlet

The spectacular performance of the well and the possibilities of immediate development of the discovery block will result in an early pipe line outlet. Sinclair Refining Company began surveying right-of-way for a 7-mile 4-inch line to extend northwest from Bonita to a point on the east edge of Nocona townsite, where connection will be made with the company's Oklahoma-Houston system.

The Bend lime is a new producing zone for Montague County, having been found late last year in the Nocona deep area. A third completion became assured for the latter area the past week when Rogers & Rogers' C. Astley-Texaco 3, southwest offset to Stanolind Oil & Gas Company's Bend discovery, cored saturation at 5233-55 feet, and halted at 5266 feet to run pipe for completion. Astley-Texaco 1, a southeast offset, drilled through the Bend, topped at 5208 feet, without making a production test in an unsuccessful try for a well in the Ellenberger at 5390-5489 feet, but made a flowing well in the lower Strawn at 4650-63 feet. The Bend pay now promises to embrace a greater producing area than either of the Strawn zones at Nocona.

Continental Oil Company's Custer 1-A, previously listed for abandonment at 3809 feet by United Producers Company and Continental Oil Company, promises to become the eighth producer for the Bowers pool, eastern Montague County. The hole was deepened to 3829 feet, and 7-inch pipe was cemented at 3705 feet on the strength of oil saturation recorded by electrical log.

Three wildcats in Montague County continue to share interest, while more prospects have been authorized, including a 2000-foot test by Gibson & Jennings, Inc. and Sinclair Prairie Oil Company on their D. T. Holt leasehold, NWc Block 36, Kaufman County School Lands, and Ramsey Petroleum Corporation on the southeast edge of the city of Montague. The latter calls for a 5200-foot test on the W. H. McGee tract, A. C. Davis Survey. Walter K. Jones Drilling Company's Johnson 1, south quarter of E. T. Section 5, A-230, 4 miles southeast of Montague, was drilling at 4390 feet, having passed up favorable oil saturation in Strawn at 3759-73 feet. W. B. Omohundro et al's Seay 1, 3½ miles south of Ringgold, was drilling shale at 5380 feet. Walter Gant and Continental Oil Company's Brown 1, 5½ miles northeast of Bowie, is making progress in recovering wire line lost while bailing oil and water from Ellenberger at 7288-7341 feet. It is due to plug back to test favorable oil saturation recorded in Bend, topped at 6112 feet, and also in the Strawn.

Adequate oil saturation to make a producer from the Lower Strawn was passed up by Continental Oil Company's Wilson-McCrory 1-A, east outpost for the northeast portion of the Hull-Silk field, at 4698-4710 feet, and the test was drilling at 4980 feet in shale to fulfill a 5200-foot depth contract. The Lower Strawn saturation correlates about 22 feet higher than top of pay in Fain-McGaha Oil Corporation's Wilson 1-G, McCrory pool discovery that made a pumper at 4735-60 feet. Continental Oil Company's test registered saturation in the upper Strawn, but the sand content was below par. Petroleum Producers Company's Wolf 1, southwestern Archer County deep test for shallow pool yielded oil and gas cut mud when tester was used at 4770-4855 feet in Bend, topped at 4770 feet, and was drilling at 5285 feet.

Bert Ligon et al's C. O. Collins 2, southern Wichita County wildcat and 4 miles west of Wichita Falls, abandoned at 5085 feet after logging top of Bend at 5030 feet. Pipe was cemented on top of Strawn saturation at 4280 feet with negative results. Semi-wildcat for the southwest corner of the county is S. H. Fagadau et al's A. D. Potts 1, near NEc SE H&TC section 4, block 7. It will try for a west extension to the K-M-A deep lime.

Shell Oil Company's Henderson 1, southwestern Clay County wildcat, drilled out plugs to 3545 feet and swabbed 45 barrels oil and 30 barrels of water in 7½ hours. L. T. Burns et al have moved in rig to drill Mullens 1, northwest outpost. Two other tests authorized for the area by Burns et al have been held up pending completion of the discovery.

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East Texas

Chapel Hill discovery well increases flow after acid

Tyler, Texas.—Acid treatment of Shell Oil Company's Henry Campbell 1, first oil completion for the Chapel Hill area, eastern Smith County, boosted the flow to 196 barrels in 7 hours through 3/8-inch tubing choke. The well had previously tested 255 barrels initial on same choke when official gauge was taken by commission representative from perforations opposite the Pettit zone at 8036-58 feet. The increase resulted from treatment with 2000 gallons of acid.

An allowable of 100 barrels daily has been assigned the well. The company has indicated that it will sell this 42-gravity oil to Hunt Oil Company at $1.10 per barrel instead of carrying out original plans to tank truck the oil to the East Texas field for delivery to the Shell Pipe Line Corporation.

Sun Oil Company's Huddle 1, located 2 miles south of the Chapel Hill gas-distillate discovery, apparently missed the pay in the Lower Glen Rose in drilling to 7625 feet. Operations were halted at this level to run electrical log before proceeding to the Pettit. Sun Oil Company has made location for H. Everhart 1, 660 feet out of southwest corner of 75-acre tract, P. Lively Survey, ½ mile southeast of the oil producer.

Hunt Oil Company's Bradley 1, Chapel Hill discovery, increased its distillate yield to 10,115 barrels during January while delivering 131,404,000 feet of sweet gas to the East Texas field for lease operations. The distillate is recovered at the well by a series of gun barrels. Bulk of the January output was sold to refineries at Overton and Waco, with 787 barrels being consigned to a plant at Winnipeg, Canada.

Shell Oil Company's George Dorsey 1, Percilla area, northeastern Houston County, was drilling at 10,615 feet. Massive anhydrite was logged at 9650-9770 feet, and anhydrite stringer at 9860

Spotlight PERFORMANCE

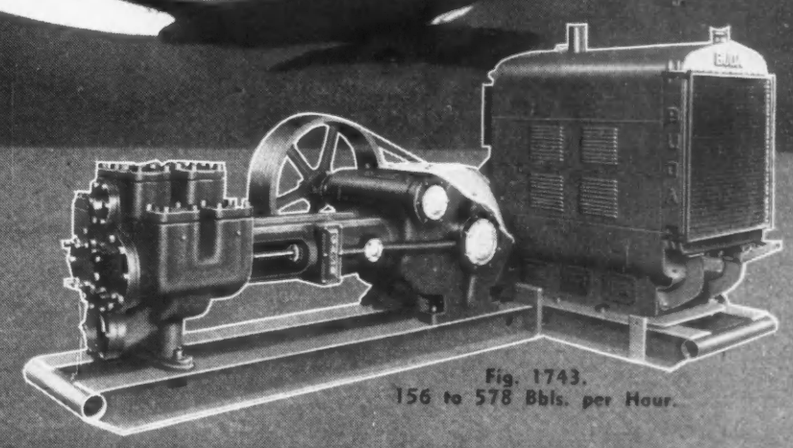

Fig. 1743.
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feet, according to electrical log, with an elevation of 393 feet. It is the deepest drilled test in the Woodbine belt.

Southwestern Anderson County developed a gas blowout February 17 when R. H. Williamson et al's O. G. Rogers 1, Wm. Greenwood Survey, ¾ mile southeast of a wildcat gas-distillate producer, kicked off after standing since mid-December with section of drill pipe lost in hole. The well was making about 15,000,000 feet of gas daily late last week, presumably from Woodbine, topped at 5380 feet. The hole is bottomed at 5432 feet, with an elevation of 241 feet. It is 6 miles southwest of Elkhart. Traffic on a nearby highway was re-routed because of the fire hazard.

Southwest Texas

Wade City crude discovery flows 191 barrels from sand

Corpus Christi.—Flowing 191 barrels of pipe line oil in 24 hours through 3/16-inch choke, Rodney Delange's Maggie McNeill 1-A has opened crude production in the Wade City field of Jim Wells County. The well cored the sand at 4913-30 feet, had casing set on bottom and was completed through perforations at 4923-29½ feet. Production is apparently the main sand body in the Vicksburg which is productive in the Alice field and is more than 100 feet below the discovery distillate level in the pool. The crude is 31.8-gravity and 68-octane rating. Pressures on the gauge were 400 pounds on tubing and 800 pounds on casing.

Completion of the well places the structure in line for considerable new drilling. Leases in the vicinity are held by Shell Oil Company, Union Producing Company, Arkansas Fuel Oil Company, Atlantic Refining Company, Anderson-Prichard Oil Corporation and others. These leaseholders can be expected to start immediate drilling operations.

Victoria field, Victoria County, added its third producing level with the completion of W. V. Hardin et al's W. Baass 1, on a 35.5-acre farmout from Shell Oil Company. The test found the sand at 3035-42 feet and on a 24-hour gauge it flowed 330 barrels of oil through 9/64-inch choke under 920 pounds tubing and 1250 pounds casing pressures.

East Telferner Defined North

W. V. Bowles apparently defined the East Telferner field of the same county to the north when he cored salt water sand at 5160-88 feet in Robertson 2, 1100 feet north of the discovery. About 3 miles southeast of the field, Mayo et al's Ragsdale 1 was tied up with a fishing job at 4675 feet. It sidetracked at 4185 feet after drill pipe was stuck at 5373 feet. Later, pipe was stuck at 4725 feet in sidetracked hole.

Renwar Oil Corporation et al were drilling below 6485 feet in G. F. Bayer et al 1, Garcia Survey, after tests above that level through casing perforations netted only salt water. The well is 7½ miles southeast of Victoria.

First definite information concerning Coronado Corporation's deep test on the Seadrift prospect, Calhoun County, has been released. The hole had been carried to 10,002 feet, 5½-inch casing set at 9696 feet and a series of tests made through perforations. A fishing job of about two months' duration delayed many of the tests. It has shown tremendous gas pressures and may open a distillate field. The well is Welder 1, in Section 8, Block 3, Hidalgo Grant.

Following a deal in which the Barnsdall Oil Company and Transwestern Oil Company acquired part of the interests of C. L. Norsworthy in the new Fagan field of Refugio County, these companies are commencing an immediate drilling program. They have staked the first well ½ mile from the discovery.

In San Patricio County, a production test is scheduled immediately in Sharp & Wood's Hart 1, a mile north of Odem and in the Burgess Survey. The well had been drilled to 7411 feet, plugged back and was being tested through perforations in casing landed at 7250 feet. No details were available late in the week.

Nueces County had another strike in the making as Windsor Oil Company's Howze 3 in the Minnie Bock field cored a new Frio sand at 5313-22 feet and on drill-stem test of 7 minutes duration recovered 300 feet of oil, 30 feet of salt

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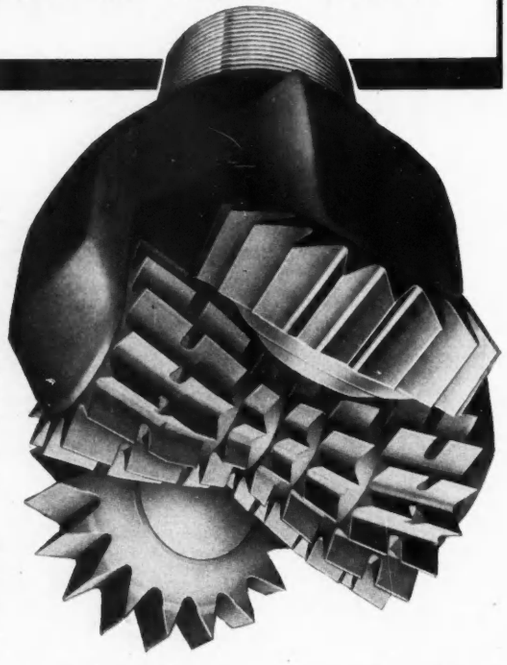

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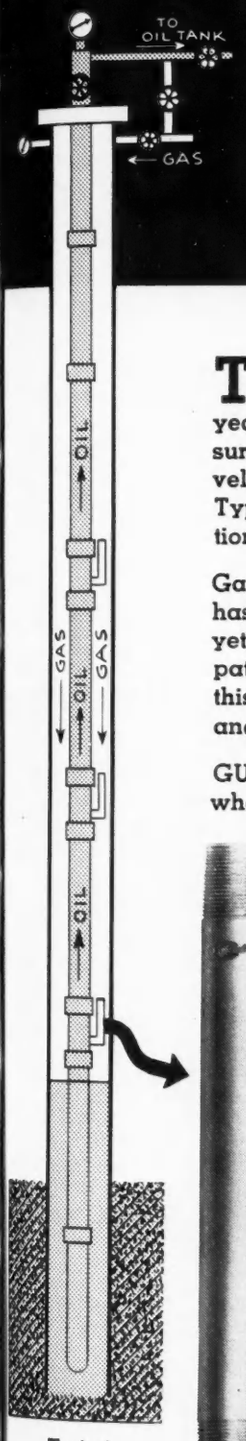

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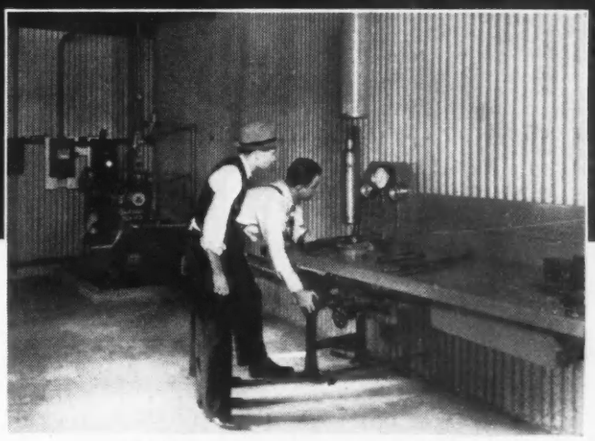

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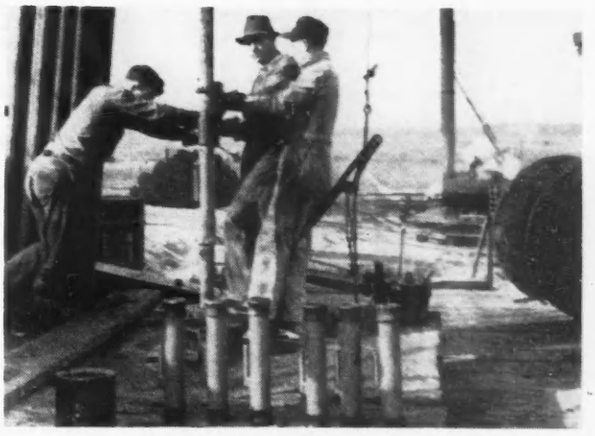
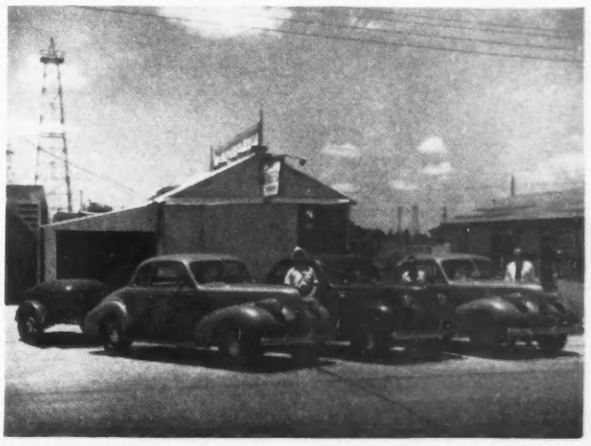


Well Crew Installing a Set of Guiberson Flow Valves



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water and 8 pounds pressure. It was being drilled to 7000 feet scheduled to be drilled to the lower level and then plugged back. The field has only one sand at present, the Catahoula at 3800 feet.

Continental Oil Company's St. Charles 1, in the St. Charles area, northeast of Lamar, Aransas County, was still wild last week. Blowing from 9335 feet, the test is showing such pressure that closing of valves on the protection string may cause it to crater.

A third oil sand in the Ben Bolt field was indicated when Cimaron Oil Company's Della Watley 2-A found a zone at 4906-20 feet. It was carried ahead and completed in the regular 5200-foot sand.

Extension test at Sejita has 150 feet sand in Hockleyensis

Laredo.—Sejita field of Duval County had its producing possibilities materially enhanced as a series of sands totaling about 150 feet were encountered in the Hockleyensis zone in Standard Oil Company of Texas' Rodriguez 1. The well is ¾-mile northwest of the discovery and only producer in the field.

Rodriguez 1 found the top of the sand series at 5474 feet and late in the week was coring for a sand in the Yegua zone near 6600 feet which showed gas and distillate in the discovery.

Two more wells in Duval County indicate new Yegua possibilities. Magnolia Petroleum Company's C. W. Hahl 3, on the west side of Government Wells structure, cored the sand at 2890-2904 feet and drilled to 3968 feet. The well was plugged back and perforations made at 2890-95½ feet. Drill stem test recovered a large volume of oil and some salt water, but on on production tests it showed only salt water. This was believed due to mechanical difficulties. The well was abandoned, but another is expected to be drilled.

Wellington Oil Company was attempting to widen the Yegua sand and open crude production at this level in the Seven Sisters field, Duval County. Welder 3-G was bottomed at 3031 feet and production being attempted just above that depth through perforations.

Magnolia Petroleum Company was ready to run a production test in A. Weil 1, ½-mile southwest extension to the Hoffman field, Duval County. The test is in Loma Novia sand at 2710-15 feet. A bad cement job delayed first production test.

Sparta-Wilcox play at critical stage; tests near objectives

San Antonio.—South Texas Sparta-Wilcox development is at one of the most critical stages since the play began a year ago. Three wells were close to their objectives late in the week following the abandonment of another wildcat.

Bee County was probably the most important area. Anderson-Prichard Oil Corporation and Mills Bennett Production Company's Robinson 2, at West Tuleta, was nearing 7900 feet. It is to set a string of casing at this level, then core into the Wilcox sands which caused blowouts in the preceding operation. Union Producing Company's Ray 56, at Pettus, was near 6700 feet, while Bunte Brothers, Inc.'s Earnest 2, six miles northwest of Skidmore, was waiting on cement after setting a string of 9⅝-inch casing at 6000 feet. Earnest 2 has encountered several showings of oil and gas.

The long testing program on the deep prospect at Ganado, Jackson County, was brought to a conclusion as W. R. Davis & Company, Inc.'s McLane 1-A was abandoned at 10,535 feet. A series of perforations had been made above this level in the Wilcox formation, but they showed salt water.

Edwin M. Jones' West, near George West in Live Oak County, was near 6000 feet, and Sinclair Prairie Oil Company's Callaghan, in northeastern Webb County, was below 3800 feet.

Shattel prospect, Frio County, test dry in Edwards lime

San Antonio.—A minor oil showing was encountered in the Edwards limestone in Sam Vanderweide et al's Witting 1, latest test to be drilled on the Shattel prospect in Frio County. The well topped the limestone at 5301 feet and on a drill-stem test at 5301-14 feet recovered 5 feet of muddy oil, 20 feet of mud with oil odor and 90 feet of sulphur water in 40 minutes. It was abandoned. This prospect was established as a non-commercial producing area about two years ago by Humble Oil & Refining Company. Subsequent drilling has failed to develop commercial production.

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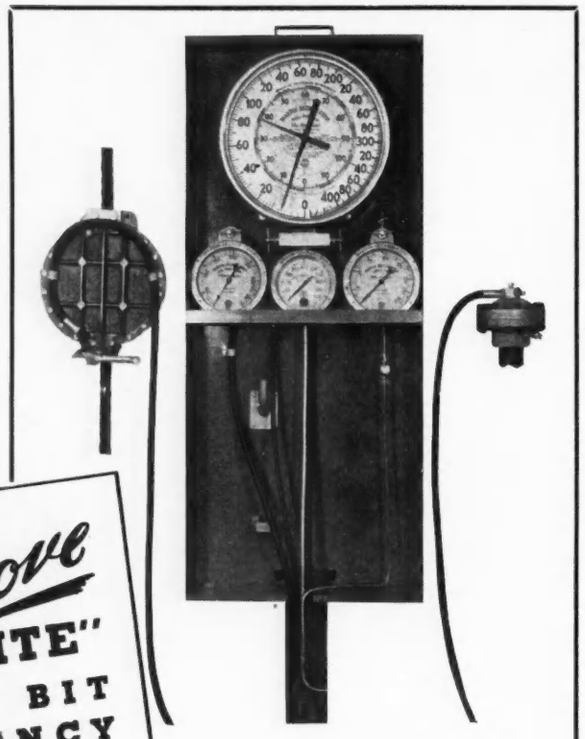

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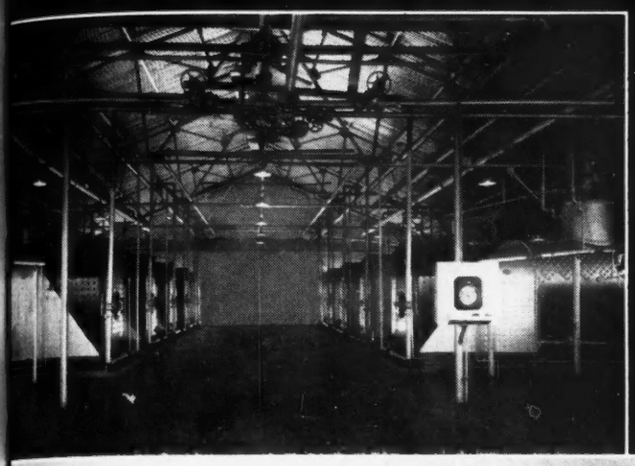

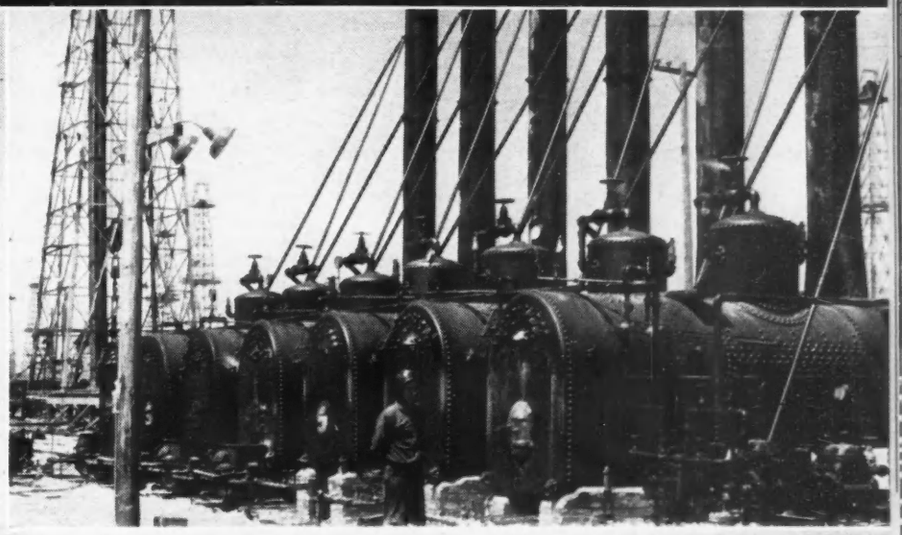

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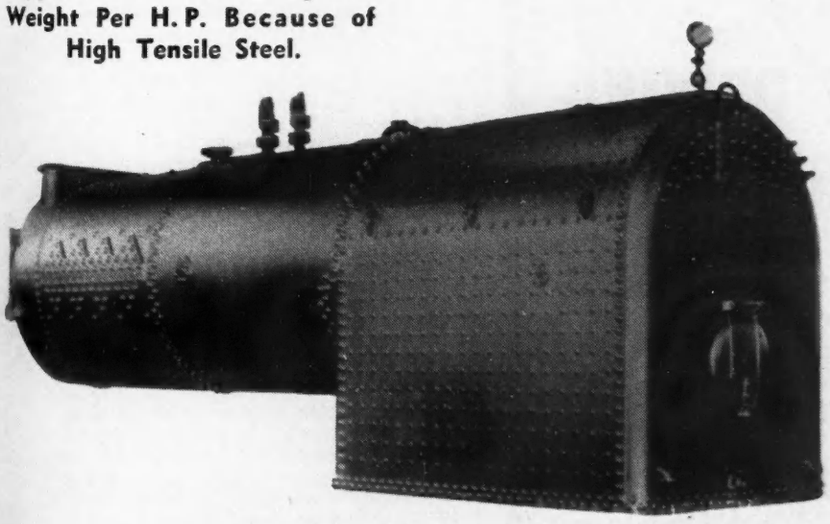

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Texas Gulf Coast

Extension test opens new sand at Anchor field

Houston.—A new oil sand was discovered 2200 feet northwest of production at Anchor field, Brazoria County, when Glenn H. McCarthy's Salmon et al 1, Geo. Robinson Survey, was perforated with 24 shots at 9820-24 feet and flowed an estimated 200 barrels of water white distillate daily through ¼-inch bottom-hole and top choke. Tubing pressure was 2200 pounds and casing was sealed. This operator's first well, field discovery, was completed in oil sands at 10,460-66 feet. Salmon et al 1, the second test, was drilled to 10,756 feet and casing was set. A series of tests were made up the hole before it was finally completed at 9824 feet.

Humble Oil & Refining Company's Galzink & Taylor 1, 4200 feet northeast of the discovery at Anchor, Brazoria County, was coring below 10,489 feet. It cored a broken sand and shale formation at 10,361-404 feet which carried a gas and distillate odor.

Glenn H. McCarthy's Houston Farms Development 2 at Chocolate Bayou, Brazoria County, was coring below 10,895 feet after logging a new oil sand for the area at 10,819-29 feet. His Andrau 1, ¼-mile southwest of the discovery, was shut down for orders at 10,958 feet.

Titantic Oil Company was cleaning out hole in Boyd 1, Double Gum Bayou area, H.&T.C. No. 9, Liberty County. This wildcat was drilled to 8834 feet, where it attempted to blow out. When brought under control, the drill pipe stuck. Operators intended to sidetrack between 5000 and 6000 feet, but they so far have been successful in cutting and pulling stuck drill pipe down below 5800 feet. This operation will be continued until trouble is encountered, and then the hole may be sidetracked. Boyt 1 is reported to have shown oil and gas when it blew out.

Northwest of the discovery well at Rosenberg, Fort Bend County, Humble Oil & Refining Company's Miller 1 was waiting on cement at 8327 feet after running a string of 7-inch casing. Hole is bottomed at 8499 feet in sand. Operators also finished cementing surface casing which had parted, causing mud returns to be lost. Side wall cores at 8258 feet, 8255 feet and 8263 feet showed a broken sand with an odor of gas.

Thompson Outpost Dry

About a mile southeast of production at Thompson, Fort Bend County, H. M. Naylor's Mulvihill Estate 1 was abandoned at 8300 feet in shale. The outpost failed to log the thick Vicksburg sand found on the flank of the dome.

About a mile south of The Texas Company's Peters 1, discovery at Hilje, Wharton County, S. G. Harrison's Carlson 1, Morris & Cummings Survey No. 3, was at 5703 feet in shale after coring sand and shale with a slight show of oil and gas at 5277-5304 feet and set 5309-17 feet. Salt water sands were cored at 5348-58 feet. An 8-minute drill-stem test was made at 5297-5317 feet through ¼-inch chokes. Sixteen stands of mud, salt water and sand were recovered. No surface pressure was shown, and bottom-hole pressure was 1400 pounds.

About 1200 feet east of production at Magnet, Wharton County, McDannald Oil Company's Shotwell 1, S. A. Larche Survey, was flowing 80 barrels of oil daily through ⅛-inch choke from sands at 5552-58 feet.

Geo. Anderson was preparing to make another test on V. Lawrence 1, 3 miles north of Cedar Point field, W. D. Smith Survey, Chambers County, after a test a week ago recovered salt water. The wildcat was perforated, washed and swabbed at 7135 feet and it showed water. Perforations were squeezed with cement, and it will probably be perforated around the same depth.

Galveston Bay Wildcat

Standard Oil Company of Texas and Salt Dome Oil Corporation have announced location for another wildcat on one of their prospects in Galveston Bay, Chambers County. These operators worked nearly all the bays in this area and are reported to have located several prospects. Their first field was at Cedar Point, Galveston Bay, Chambers County. State 61 is 467 feet out of the northeast corner of a 640-acre tract in tract 61.

Two miles northwest of Blessing, Matagorda County, Providence Oil Company has abandoned Strawbridge 1, J. W. E. Wallace Survey, at 9015 feet. Salt water sands were cored at 7922-27 feet.

South of El Campo, Wharton County, H. C. Cockburn's wildcat, Reitz 1, E.T. R.R. No. 59, was completed dry in shale at 6515 feet. Salt water sands were cored at 6031 feet and at 6234-47 feet.

Titantic Oil Company's M. Guiterman B-1, second well on the northeast side of South China field, Jefferson County, was making about 80 barrels of pipe line oil daily through a 6/64-inch choke with a tubing pressure of 1700 pounds and a casing pressure of 2300 pounds. This well was reported in error a week ago as flowing 150 barrels of fluid daily, 80 percent oil and 20 percent salt water, through a 7/64-inch choke. It did not make any salt water. It was wash-water. Now that it has cleaned itself, it is flowing clean pipe line oil. It was completed at 7518 feet.

On the south side of Martha field, Liberty County, Stanolind Oil & Gas Company is preparing a test on Ross 1 after drilling to 8146 feet and setting 5½-inch casing at that depth. Cores at 8074 feet, 8084 feet and 8134 feet showed odors of oil and gas. Salt water sands were cored at 8154-64 feet. Ross 1 is the only active well at Martha, and the company abandoned two locations in the district last week.

Continental Oil Company's Bender Estate 1, Spring area, H. Decrow Survey, Matagorda County, has created considerable interest. The wildcat is being drilled "tight" and very little information is being given out.

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West Cote Blanche test coring below oil show

Lakes Charles.—In The West Cote Blanche area, St. Mary Parish, The Texas Company's State 1, wildcat in 16s-7e, was coring in shale below 7460 feet after logging a sand and shale formation at 7334-84 feet which carried a slight show of oil.

Mikton Oil Company is preparing to test a new oil sand at Lafourche Crossing, Lafourche Parish, in Martinez 2, 1650 feet southeast of the discovery. Martinez 2 was drilled to 11,000 feet and 5½-inch casing was set at 10,042 feet. The well had sands showing oil, gas and salt water from 8689 to 8700 feet, distillate sands at 9634-56 feet, oil sands at 10,000-06 feet and salt water at 10,006-20 feet. The discovery in this field was completed around 10,127 feet.

Ville Platte, Evangeline Parish, was extended southeast last week when Danciger Oil & Refining Company completed its first Wilcox well for the area. Vidrine 1 was perforated at 10,133-64 feet and it came in flowing 336 barrels of fluid daily, 8 percent salt water, through a 3/16-inch choke. Vidrine 1 was drilled below 10,244 feet and 6-inch casing was set. It had top of Wilcox higher than other wells on the southeast side of the field.

The deepest sand yet found on the flank of West Hackberry field, Cameron Parish was at 8148 feet in Superior Oil Company's Vincent 2, Section 30-12s-10w. The operators perforated casing at 8088-8148 feet in the west flank test and made a production test which showed 305 barrels of 42.8-gravity oil daily through a quarter-inch choke.

On the Point Au Fur Island prospect in Terrebonne Parish, Barnsdall Oil Company is having trouble with stuck drill pipe in Nelson Development Company 1, Section 2-21s-11e, after drilling to 11,228 feet. The company is now fishing. A sand with a show of gas was cored at 10,160-215 feet.

On the West Bay prospect, Plaquemines Parish, Gulf Oil Corporation was having trouble with Buras Levee 1-D, section 6-23s-31e. The test is bottomed at 10,103 feet and flowing salt water. The test has evidently logged a high pressure salt-water sand, similar to that at Lake Borgne, St. Bernard Parish.

The Texas Company was preparing a test on its first well at Grand Bay field, Plaquemines Parish. State Lookout Pass 1, section 48-20s-18e, is bottomed at 10,342 feet in shale and 7-inch casing was being set. It had oil sands at 9296 feet. The Texas Company was carrying L. L. E. Paradis 3, Paradis field, St. Charles Parish, deeper after coring a new deep sand. The hole was down to 11,100 feet in shale. Sand and shale with an odor of oil and gas were cored at 10,918-53 feet.

Amerada Petroleum Corporation is attempting to open a new oil sand at Grand Lake, Cameron Parish, in State 3, section 12-13s-4w. The hole was drilled to 9005 feet and 5½-inch casing was set at that depth. It was perforated with 134 shots at 8405-8552 feet. Tubing is being run.

On the Neale prospect in Beauregard Parish, Atlantic Refining Company's Whitmer 1, section 26-3s-11w, cored salt water sands in the Cockfield formation last week at 5685-90 feet and was drilling below 6541 feet. The well is projected to the Wilcox formation.

The deepest well ever drilled at Jennings field, Acadia Parish, is Glassell & Glassell's Trushell 8, section 47-2s-2w. The hole is now below 10,505 feet in shale, below the Vicksburg formation, and is attempting to open a new oil sand for the field.

North Louisiana

Elm Grove test plugs back from barren Lower Marine

Shreveport.—The first test ever drilled to the Lower Marine in the shallow Elm Grove field, Bossier Parish, proved non-productive in this horizon and was plugged back last week to 1640 feet for completion in the producing shallow zone of the field. Gulf Refining Company's Hodges 20, SE SW 24-16n-12w, drilled to 8647 feet without getting any shows in the Lower Marine levels. Top of the Lower Marine was 7971 feet. Electrical log was run to bottom before hole was plugged back. The test topped the massive anhydrite at 4017 feet and topped a porous section at 4411 feet.

Two locations, both for shallow wildcats were made last week. Louis K. McGuffin of Shreveport will drill several miles south of the shallow Bellevue field, Bossier Parish, to around 1200 feet in Garland 1, SE SE SE 16-18n-11w, and H. L. Hunt will drill another shallow test on his large block of wildcat holdings in LaSalle Parish, the new test being Louisiand Central Lumber Company 1, NE NE 13-10n-2w. L. I. Davis and associates are adding to their wildcat holdings in township 15 north, range 15 west, Caddo Parish, where a 5200-foot test will be drilled by next May 1. Atlantic Refining Company began a series of core-hole tests in township 9 north, range 2 east, LaSalle Parish.

Location was made for a Tokio sand test east of production from the regular Pettet (basal Glen Rose lime) producing area of the Shreveport field, at A. G. Blanchard's Mada Corporation 1, NW SE 25-18n-14w. Contract depth is 3000 feet. Several wells drilled to the Pettet in the Shreveport field have shown strong gas pressure in Tokio.

Testing of G. D. Juan's Frost Lumber Company 1, SE SW 14-10n-15w, DeSoto Parish wildcat, in which an oil showing was reported from 2946-53 feet in broken chalk, was delayed by high water. Casing was set at 2931 feet. Eagle Ford shale was topped at 2855 feet.

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El Dorado.—Location for another test to be drilled to the Smackover lime on a geophysical wildcat prospect in South Arkansas was staked last week by Standard Oil Company of Louisiana at W. P. Sturgis 1, C NW SE 1-17-27, Miller County, near Fouke.

Two Glen Rose lime wildcats and several shallower tests have previously been drilled without getting production in this general area. Standard Oil Company in July, 1937, drilled a test in SW SW 33-16-26, to 5575 feet and Erwin & Leach, in Section 2-17-26, drilled to 5212 feet.

In the Falcon area, Nevada County, where a few shallow Nacatoch oil wells of small capacity have been completed, W. C. O'Farrell and Texas-Canadian Oil Company's Stocks 1, NE SW SE 9-15-22, which topped porous Smackover lime at 5985 feet and cored from 5999 to 6019 feet without show, waited orders at that depth.

Two permits were authorized last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—Mid-Continent Petroleum Corporation and Standard Oil Company of Louisiana, R. S. Foster 1, C SE SW 24-17-20; Miller County—Standard Oil Company of Louisiana, W. P. Sturgis 1, C NW SE 1-17-27.

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Operations in Tinsley Dome area are slowing down

Jackson. — Four new locations, all operations of Union Producing Company, were staked last week in the Tinsley Dome field, Yazoo County, and standard pumping equipment was installed at two wells of the field, the first pumping equipment so far employed there. Both the wells having standard pumping equipment installed are operations of Jones & O'Brien, and are Jennie Stevens B-1 and B-2, Section 13-10n-3w.

The four locations, all requisite offsets, are: Jennie Stevens 5, C SW NE 11-10n-3w; Jennie Stevens 6, SW SE 12-10n-3w; Jennie Stevens 8, C NW NE 12-10n-3w; and George Herron 1, C NE SW 11-10n-3w.

Union Producing Company's G. C. Woodruff 6, C SW NW 13-10n-3w, in a second drill-stem test with seat at 4852 feet and total depth of 4872 feet, in 10 minutes showed 2160 feet of salt water, with top pressure of 5 pounds and flowing pressure of 1600 pounds. The test is coring and drilling ahead.

Jones & O'Brien's Jennie Stevens C-1, SE NE 11-10n-3w, after topping chalk at 4492 feet on the down-throw side and drilling to 4703 feet in sandy shale, was whip stocking 1800 feet to the south to pick up the Woodruff sand after missing this formation in original hole.

Magnolia Royalty & Leasing Company (formerly Yazoo Refinery) at Brooks 1, SE NE 17-10n-2w, ran electrical log to 5055 feet after coring the Woodruff sand at 5051-55 feet, which was white sand. Elevation is 193 feet (derrick floor). The test is now shut down waiting orders.

Rocky Mountain Fields

Operators all oppose federal claim to Lance Creek leases

Casper Wyo.—Title situation of lands in the east sector of the Lance Creek field was thrown into confusion this week as the Department of the Interior served notice of contest to companies and royalty holders presumably holding oil development and mineral equities to some 1200 acres held under oil placer claims.

Claims involved are the Apex, Rodeo, Leo, Cash, and Lamb Oil Placer Claims, an area in which the early development work of Lance Creek centered, and which recently came into activity with drilling of wells to deep sands in the Sundance and Minnelusa formations. Continental Oil Company and Ohio Oil Company hold rights to the claims.

Operators, both directly interested and others, branded the contest move "as a highly confiscatory" and are joining together to oppose the government taking title to the lands.

In the West Ferris field, which marks

the Rocky Mountain division's first oil strike, a new producing zone, Sinclair Wyoming Oil Company's West Ferris 4-E, CSE SW 29-26n-87w, Carbon County, deepened into water in the base of the Tensleep at 4316 feet, and is plugging back to complete with hole bottomed at 4310 feet. From casing point of the 7-inch to 4310 feet, the well earlier in the week flowed 7½ barrels per hour of clean oil, assuring commercial production and discovery of the Tensleep as oil bearing in this field. The field is one of the several structures on an east-west trend along the Lost Soldier uplift. Like other fields on the major fold, the field produces gas from the Dakota and Sundance zones.

Third deep well in the Cole Creek field, Natrona County, Wyoming, General Petroleum Corporation's 1-21-G, CNW NW NW 21-35n-77w, passed through its first objective the Wall Creek sands, where it had some saturation, and is drilling below 7000 feet headed for completion in the Dakota-Lakota sands at around 8000 feet.

Michigan

Allegan County wildcat has 300 feet of fluid in Traverse

Mt. Pleasant, Mich.—DeVries Trustee's Hutchins 1, NW NE SW 4-2n-16w, Allegan County wildcat, shut down for orders last week after logging 300 feet of fluid in the Traverse at 1291 feet, 6 feet in the formation. Enough free oil was indicated to warrant setting casing.

In the basin, Sun Oil Company completed State-Redding A-1, SW SW 11-19n-6w, for a 2-barrel pumper in the Michigan Stray at 1425 feet. This test, drilled on a 4000-acre state lease, was carried to the Monroe where it bottomed out dry at 3926 feet. It was plugged back to 1425 feet and shot with 20 quarts. Its commercial status was questionable but with a well able to hold the big lease it seemed likely that extended effort to produce it would be put forth. Location is semi-wildcat about 5 miles northeast of the Monroe lime field at Temple in Freeman and Redding Townships.

George Kernodle's Cook 1, SW NE NE 23-7n-13w, Tallmadge Township, Ottawa County, pumped 35 barrels after acid from Traverse at 1881 feet to oper up an estimated 100 to 200 acres more for drilling onthe northwest side of the Tallmadge-Walker field.

Out of 14 active wildcats in the basin, chief interest centered on Sun Oil Company's Switzer 1, NW NE 26-19n-3w, Hamilton Township, Clare County, reportedly running 42 feet higher on upper beds than correlating tests. Traverse was logged at 3076 feet, and drilling was below 3300 feet this week. Dundee-Monroe lime is the objective.

Turner Petroleum Company's Hauck 1, NE NW 24-15n-5w, Isabella County, logged Dundee at 3784 feet and water at 3790 feet. It is being deepened below 3805 feet. C. L. Maguire, Inc.'s Clark 1, Section 32-16n-2w, Midland County, is drilling Monroe lime below 4275 feet. Dundee top was logged at 3726 feet.

California

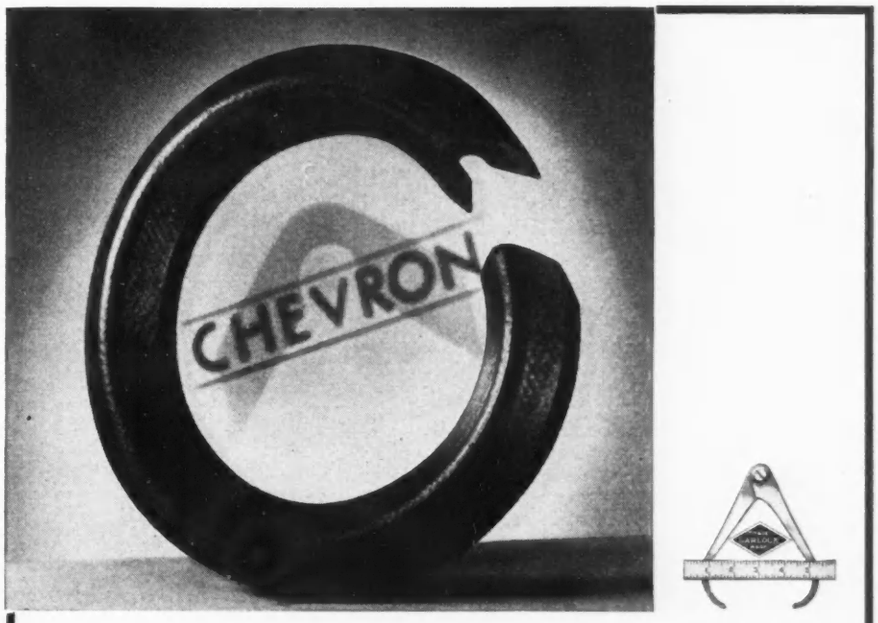
Rio Bravo outpost running 20 feet high

Los Angeles.—Superior Oil Company's Roe 1, northwest outpost to Rio Bravo, San Joaquin Valley, topped the Vedder at 11,159 feet, 20 feet higher than at the company's Burner 1 and at the highest point in the field. Casing was set. If development shows the well to have located the center of the field, further extension by two or three miles may be expected.

The week's largest completion was Shell Oil Company's 83-29, Ten Section pool, which gauged 4300 barrels of 33.2-gravity oil along with 2,000,000 cubic feet of gas from 8220 feet. Seven-inch was set at 8038 feet, and only a small part of the Stevens zone was taken for the production test.

Shell Oil Company's KCL 2A-52-13, Section 13-11-22, southwest of Bakersfield, was drilling below 13,700 feet. The test is being watched as a possible attempt to break the depth record, held by Continental Oil Company at 15,004 feet.

Union Oil Company confirmed reports that $285,000 was paid for lease on 5300 acres in the Lerdo district, Kern County. The block is in Townships 27-26, 28-26 and 28-27, east of Highway 99 and extending from Famoso to the Kern River front.



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Garlock CHEVRON PACKING is so constructed that it adjusts itself automatically to compensate for variations in pressure. The exclusive hinge-like, cross-sectional shape expands as the pressure increases and contracts as the pressure decreases. Friction on the rod and on the packing itself is thereby reduced to a minimum. Chevron seals tight with less wear. Genuine Chevron packing is made and sold only by Garlock.

GARLOCK 430 CHEVRON for hydraulic service; 431 for oils at low temperatures; 530 for steam, air or gas; 531 for hot oils.

THE GARLOCK PACKING CO.
PALMYRA, NEW YORK
Tulsa, Okla. Houston, Tex. Los Angeles, Calif.

GARLOCK CHEVRON PACKING

UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Standard Oil Co. of La., Longino 1, 19-17-19	720	7655
Southwood Oil Co., Couch 1, 23-17-20	360	7645
Union County (Rainbow City)—		
Fohs Oil Co. et al, Grace 1, 31-17-14 (workover)	240	3468

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County—		
George Morgan, Ericke 1 (Yorba Linda)	100	2145
Union, Rosecrans 37 (Rosecrans Athens)	148	7700
Union Pacific, UP (LB) 127 (Wilmington)	242	3920
UP (LB) 129 (Wilmington)	198	3567
Kern County—		
Standard, KCL 20-3 (Coles Levee)	820	9934
No. 6-33D (Midway Sunset)	315	3230
Vanguard Oil, Baker 10 (Mt. Poso)	250	1799
Shell, KCL A-83-29 (Ten Section)	4346	8220
Kings County—		
Standard, No. 27-19J (Kettleman Hills)	472	10,968
Ventura County—		
General Pet., Tomson 2 (Rincon)	108	3774
Continental, Grubb 13 (San Miguelito-Padre Canyon)	2619	6720
Shell, Edison 35 (Ventura Avenue)	874	9135
Santa Barbara County—		
Union, O'Donnell 2-4 (Santa Maria Valley)	1700	5261
Humbolt County—		
Texas, Holmes-Eureka 1	¶5.2	4850

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Bond County—		
R. F. Anderson, Morris 1, nwc 16-6n-3w	*	1200
Clay County—		
Pure, Haselton 1, c e½ ne ne 13-2n-7E	*	3054
Clinton County—		
Fairhope, Holstenburg 1, w½ ne se 13-1n-1w	*	1551
Jones & Deaton, Langenfeldt 1, Lot 13, blk 2, 13-1n-1w	450	2913
Max Pray, Storer 1, sw nw ne ne 13-1n-1w	1100	2915
Fayette County—		
Gulf, Whitehead 5, nw nw nw 6-5n-3e	154	1625
Small 19, se se sw 25-6n-2e	58	1611
Texas Co., Morgan 1, ne se sw 25-6n-2e	168	1610
Ohio, Williams 5, se se nw 36-6n-2e	115	1617
Schwarm 7, ne sw sw 30-6n-3e	35	1577
Carter, Durbin 3, nw sw nw 9-7n-3e	42	1564
Minerva, Lingrend 1, se sw sw 16-7n-3e	75	1550
Carter, Welker 10, se ne ne 18-7n-3e	81	1569
Wood 10, nw nw sw 15-8n-3e	144	1589
Wright 11, sw ne nw 21-8n-3e	192	1620
Brooks 1, ne nw se 23-8n-3e	486	1531
Kingwood, Sloan 1, c ne se ne 29-9n-2e	*	2008
Ford County—		
Nelson-Brown & Erp, Stroh 1, ne se nw 19-24n-7e	*	2225
Marion County—		
Texas Co., Shanafelt 7, se ne nw 16-2n-2e	175	1881
Hart et al, School 4, ne ne nw se 20-2n-2e	2590	3436
Magnolia Pet. Co., Young 78, se ne se 20-2n-2e	1945	3447
Ohio, Young 17-D, sw se se nw 20-2n-2e	2314	3426
Shell, Young Hrs. 3-C, se sw se se 20-2n-2e	3227	3419
Magnolia, Young 77, nw nw nw sw 21-2n-2e	1034	3465
McBride, Inc., Lee 18, sw nw ne se 29-2n-2e	4341	3414
Magnolia, Shanafelt 33, ne ne nw se 29-2n-2e	4800	3404
Shanafelt 34, nw sw nw se 29-2n-2e	6337	3419
Shanafelt 35, nw sw se 29-2n-2e	4800	3404
Young 17, ne sw nw ne 29-2n-2e	4800	3416
Young 19, se se sw ne 29-2n-2e	2695	3431
Paul Rossi, Brooks 8, sw ne sw 29-2n-2e	3000	3421
Texas, Lee 12, nw nw se ne 29-2n-2e	7833	3440
Fossleck 13, sw ne nw nw 29-2n-2e	8785	3408
Friedrich 15, sw sw nw 29-2n-2e	231	2050
Friedrich 21, se nw sw 29-2n-2e	4536	3405
McCollum 21, nw se se 29-2n-2e	7539	3442
Shanafelt 13, sw ne ne 29-2n-2e	5621	3426
Shanafelt 14, nw ne ne 29-2n-2e	8856	3424
Stroup 15, c n½ se 30-2n-2e	406	2075
Stroup 11, c e½ ne nw 31-2n-2e	480	2025
Friesner-18, nw se ne nw 32-2n-2e	7608	3355
Richland County—		
Pure, Heap 2, c w½ ne sw 30-5n-10e	467	2890
Murray 2, nw se ne sw 31-5n-10e	57	2900
Wabash County—		
Tidewater, LeGrier 6, sw sw nw 16-2s-13w	120	2421
Continental, Gray 4, sw nw nw 29-2s-13w	150	2470
Holstead Oil Co., Gray 3, ne nw nw sw 29-2s-13w	*	2482
Washington County—		
Shell, Dix 2, sw sw ne ne 19-3s-1w	12	1371
Magnolia, Gill Estate 2, se ne nw 26-3s-3w	60	1279
Gill Estate 3, ne sw nw 26-3s-3w	94	1288
Gill Estate 4, se nw nw 26-3s-3w	64	1292
Wayne County—		
Pure, Powell Consolidated 1, c e½ sw sw 4-1n-8e	479	3130
McCracken 4, c w½ se se 33-2n-8e	116	3130
Duff 1, c e½ sw se 31-3n-8e	14	3067
Oils Inc., Large 1, ne nw sw 20-3s-8e	*	3380
White County—		
Sun Oil Co., Greathouse 1, sw se nw 4-5s-14w	240	2907
Superior, Ford 15, nw se ne 9-5s-14w	150	2198
Frontier, Bennett 1, 60 ft n of c n½ se ne	122	2261

Indiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Gibson County—		
W. P. Lacy, Dunn 1, ne sw sw 18-3s-13w	112	2520
Continental, Thrash 2, ne nw nw ne 18-3s-13w	134	2510
Midwest Dev., Beatty 2, se ne nw 15-2s-9w	*	1675
Posey County—		
Superior Oil Co., Mumford 2, sw se nw 31-3s-13w	*	2716
Vanderburgh County—		
J. L. Drake, Seib 1, nw sw nw nw 23-5s-10w	*	1000

Kansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton County—		
Marshall, Weber 1, nec se 14-16-12w	2702	3350
Shell, Barth 1, cwl nw ne sw 15-17-11w	1098	3293
Pigott et al, Schneider 1, c n½ nw nw 6-18-15w	*	3697
Phillips, Petz 1, c s½ se ne 7-20-11w	3000	3324
Alpine, Andrea 1, c s½ sw ne 8-20-11w	*	3395
Crown, Ernsting 1, c w½ ne se 1-20-12w	191	3375

*Failures; †Junked; ¶Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended February 24, 1940

	WELLS COMPLETED							PERMITS FOR NEW WELLS*				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	3	3	.....	.....	1,320	29	45	2	5	12	31	223
California	14	13	1	.....	12,192	210	161	14	69	166	159	1,136
Colorado	.....	.....	.....	.....	.....	2	2	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois*	57	50	.....	7	99,199	545	673	78	274	650	.....	893
Indiana	5	2	.....	3	246	65	23	.....	.....	.....	.....	.....
Kansas	24	20	.....	4	27,837	237	202	31	108	235	197	1,583
Kentucky	4	3	.....	1	108	41	119	.....	.....	.....	.....	.....
Louisiana	13	11	.....	2	3,413	239	145	.....	105	187	194	1,449
Michigan	27	20	.....	7	3,512	222	178	.....	53	211	146	1,419
Mississippi	1	.....	.....	1	.....	25	1	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Montana	4	3	.....	1	406	26	20	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	17	14	1	2	5,418	129	108	22	34	125	.....	293
New York	22†	22†	.....	.....	122	173†	83†	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	16	5	4	7	35	156	145	.....	.....	.....	.....	.....
Oklahoma	35	23	4	8	8,606	325	300	36	95	290	295	2,059
Pennsylvania	47†	44†	2	1	43	430†	200†	.....	.....	.....	.....	.....
South Dakota	1	.....	.....	1	.....	1	.....	1	1	1	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	225	159	12	54	91,485	1,638	1,637	97	541	1,606	1,556	10,269
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Virginia	10	2	8	.....	31	114	77	.....	.....	.....	.....	.....
Wyoming	4	4	.....	.....	6,632	27	32	.....	.....	.....	.....	.....
Total this week.	529	398	32	99	260,605	4,600	4,152	281	1,175	3,485	2,578	18,752
Total last week.	438	339	21	78	159,359	4,071	3,721	265	1,174	3,204	2,311	18,752
Total this year.	4,600	3,323	293	984	1,697,030	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Smith et al, Cannon 1, nwc 28-26-7e	*	2775
Strickler, Cease 1, swc ne 21-28-4e.	25	1747
Cowley County—		
Garden, Rahn 1, swc nw 13-34-5e..	595	2953
Ellis County—		
Dickey, Henderson "A" 4, c s½ nw ne 7-11-17w	3000	3428
Cities Service, Colahan 8, se nw sw 24-11-17w	3000	3548
Marion County —		
Troxwell et al, Bezdek 1, ne sw sw 32-17-4e	*	2501
McPherson County—		
Stelbar, Jones 1, c n½ ne nw 19-17-1w	300	2687
Bradley Bros. et al, Mattson 1, c s½ nw ne 30-20-5w	90	3373
Rice County—		
Vickers, Roeseler 4, c e½ ne sw 5-18n-10w	1662	3213
Cities Service, Gossman 2, c e½ sw se 5-21-7w	32	3409
Russell County—		
Shields et al, Letsch 7, csl sw ne se 27-14-13w	3894	2877
Stanolind, Krub "B" 3, cwl sw ne ne 27-14-14w	386	3058
Vernon O&G Co. et al, Olson "C" 3, c e½ se nw 27-14-14w	2707	3015
Central Petroleum Co., Foster 18, c n½ nw nw 3-14-15w	720	3077
Gulf, Mollie 11, csl sw nw se 25-15-14w	1150	3318
Cities Service, Hennessy 3, sec 26-15-14w	2865	3332
Sumner County—		
Champlin, Latta 1A, ne se nw 9-30-2w (otd 3252 ft)	385	3067
Woodson County—		
Aikman et al, Massey 5, ne sw se 35-23-14e	35	1636

Kentucky

Daviess County—		
J. C. Miller et al, Morgan 8	50	1258
Henderson County—		
Hunt et al, Griffin 1	8	697
Livingston County—		
John Jefferson, LaRue 1	*	1750
McLean County—		
J. D. Reynolds et al, Howell 8	50	1164

Louisiana Gulf Coast

Abbeville—		
Continental, De Mary 1	55	10,326
Bancroft—		
Republic, Hennigan 2	168	7330
Baton Rouge—		
Wm. Helis, Duplantier C-2	275	6500
Lisbon-Iberia, College Town 3-A	210	6315
Bayou Des Allemands—		
Amerada, Gheens 3	81	7478
Eola—		
Amerada, Dent 2	681	8575
Garden Island—		
Texas Co., State 41	453	6130
Golden Meadows—		
Jim McMurray, Collins 2	198	5500
Horseshoe Bayou—		
Texas Co., St. Mary Parish 3	355	10,867
Lafitte—		
Texas Co., Rigolets 12	634	9730
Valentine—		
Wm. Helis, Valentine 5	*	6982
West Hackberry—		
Superior, Vincent 2	304	8148
Calcasieu Parish—		
E. W. K. Andreau, Blackman 1, s of Iowa, sec 20-9s-6w	*	8027

Michigan

Allegan County—		
V. Leonard Oil Co.'s Detchemendy 1, ne ne nw 19-1n-12w	*	1683
Jacob Bolema's Brower 3, ne nw ne 34-4n-14w	200	1525
Spregner Brother's Graveling 1, sw ne se 34-4n-14w	250	1524
Charles Cook, Hazekamp 2, se sw nw 34-4n-14w	200	1474
Arenac County—		
Don Rayburn's Bishop 1, nw nw sw 14-20n-4e	*	1306
Clare County—		
Sun Oil Co.'s State-Redding A-1, cs sw nw 11-19n-6w	2	1425
American Dr. Co., Newcomer 9, c n nw ne 32-19n-6w	350	3874
Gladwin County—		
Sun Oil Co., Tubbs 1, c w nw sw 2-18n-2w	*	3916
Isabella County—		
Gulf Ref. Co., Reed 2, sw sw nw 16-16n-3w	45	3711
Cities Service, Ramey 2, se sw nw 28-16n-3w	15	3703
Kent County—		
George Kernodle, Goree 1, sw nw nw 31-7n-12w	60	1864
C. A. Walsh, Whalen 2, ne ne sw 32-7n-12w	80	1905
Smith Pet. Co., Plaster 3, nw ne se 34-7n-12w	*	1828
Certain-Teed, Fee 11, ne ne ne 4-6n-12w	200	1778
Mich. Devonian, Jansma 1, e sw se 14-6n-12w	50	1879
W. R. Alexander, Hop 1, sw se se 14-6n-12w	90	1907
Oceana County —		
C. W. Teater, Cartier 1, c s sw sw 31-16n-15w	*	2090
Ottawa County—		
George Kernodle, Cook 1, sw ne ne 23-7n-13w	25	1881
Smith Pet. Co., Masterson 3, ne se se 23-7n-13w	225	1895
Gordon Oil Co., Connell 1, se se se 24-7n-13w	305	1935
Columbia O&G Co., Daverman 1, sw sw ne 24-7n-13w	*	1975
Twin Drilling Co., McKay B7, sw nw sw 24-7n-13w	75	1897
Wolverine Nat. G. Co., Snip 2, se ne sw 24-7n-13w	80	1908
American Dr. Co., Zokoe 3, nw se sw 24-7n-13w	400	1877
Smith Pet. Co., May 2, nw se nw 25-7n-13w	60	1863
Century O&G Co., Riordian 1, ne nw nw 25-7n-13w	800	1888
Van Buren County—		
H. Brown Cannon, Smith 1, nw nw ne 1-1s-15w	*	1302

Mississippi

Hinds County (Jackson)—		
Buckeye Cotton Oil Co., Crescent Oil Co. 1, 3-5n-1e	*	2450

Montana

Glacier County (Cut Bank)—		
Glacier Prod. Co., Lookhoff 2, cnw ne 33-33n-5w	204	2992
Scheuren 3, csw se 20-33n-5w	97	3057
State 6, cwl nw 16-33n-5w	105	2912
R. C. Jeffries, Evchange Oil Co. 1, cnw nw 34-36n-6w	*	2985

New Mexico

Chaves County (Wildcat)—		
H. E. Yates et al, Johnson 1, c ne nw 24-15s-28e	¶0.8	3285
Eddy County—		
Addison Oil Co., Shugart 1, c ne ne 29-18s-31e	74	3573
R. W. Fair et al, State 2, se se nw 2-18s-29e	1099	2653
F. G. Keyes et al, State 4, c ne se 4-17s-28e	*	1923
Me-Tex Supply Co. et al, Yates 4, c ne sw 5-18s-29e	†	2590
Eddy County (Wildcat)—		
C. B. Buck et al, State 1, swc 31-16s-29e	45	2652
Lea County (Eunice)—		
Drilling & Explo. Co., Inc., State 2-D, sw nw se 36-21s-36e	40	3811
Lea County (Langlie)—		
Leonard Oil Co., Johns-Skelly 1, c ne ne 20-25s-37e	52	3412
Lea County (Lovington)—		
Skelly, State 2-N, near c ne ne 36-16s-36e	144	5000
Lea County (Maljamar)—		
E. G. Woods et al, Simon-Maljamar 1, c nw ne 29-17s-32e	250	3766
Lea County (Monument)—		
Stanolind, Gilluly 6-B-a, near c n½ ne ne 21-20s-37e	¶2.2	3855
Lea County (Penrose)—		
Gulf, Christmas 3-C, c w½ sw ne 18-22s-37e	2200	3720
Eaves 1, c ne ne 10-22s-37e	110	3700
Lem Peters & Elder, May-Repollo 4, sw se ne 34-22s-37e	200	3643
Two States Oil Co., State-Gulf 5, c se ne 16-22s-37e	132	3693
Lea County (Rhodes)—		
Texas Co. et al, Rhodes 1-B, ne sw ne 27-26s-37e	1013	3280
San Juan County (Rattlesnake)—		
Continental Oil Co., Tribal 102, se se sw 2-29n-19w	59	845

New York

Allegany County—		
Trio Oil Co., Durham farm, Bolivar	30	1315
R. B. Moore et al, Daggett farm, Bolivar	9	1286
Penn-York Oil Co., Welch farm, Bolivar	6	1448
Westside Oil Co., LeSuer farm, Bolivar	4	1165
Messer Pet. Corp., Wilson farm, Bolivar	10	1411
Richardson Pet. Corp., Towner farm, Scio	8	1174
Messer Pet. Corp., "M," Garrison farm, Alma	8	1416
F. E. Richart et al, Barrett farm, Alma	5	1569
Pure Penn Oil Co., Gowdy farm, Scio	8	1248
Summitt Oil Co., Doty farm, Scio	3	1146
Wm. McEnroe et al, Jordan-Boyd farm, Andover	4	1373
L. H. Thornton et al, Brown farm, Alma	9	1372
Bliven Hill Oil Co., Norton-McEwen farm, Scio	6	895
McMurdy & McCann, O'Connor farm, Genesee	8	1355
Messer Oil Corp., Coon farm, Genesee	8	1359
WATER (INTAKE) WELLS		
Forest Oil Co., Ackerman farm, Bolivar	..	1418
Utter Oil Co., Richardson farm, Alma	..	1360
Porge Oil Co., Anderson farm, Alma	..	1280
Bradley Prod. Corp., Monitor farm, Alma	..	1394
O. D. Underwood et al, McDivitt farm, Bolivar	..	1338
Stout Cousin Oil Co., Brandes farm, Wellsville	..	1325
A. C. Shaner Oil Co., Childs farm, Clarksville	..	1250

Ohio

Athens County—		
A. D. Townsend, McCall 1	¶.60	1101
Ohio Fuel G. Co., Morrison 1	*	1113
Coshocton County—		
Bell Bros., Lowe 1	*	920
Guernsey County—		
Strangs & McCloy, Oliver 1	¶.25	1387
Holmes County—		
J. C. Moore et al, Sterling 1	*	760
Knox County—		
N. T. Shorts et al, Gardner 1	5	3734
David Shaffer, Farquaker 1	*	3050
Licking County—		
Midland Oil Co., Bowser 7	20	3095
Ohio Fuel G. Co., Hansberger 1	¶3.50	2207
Allen & Wiley, Eshelman 3	¶1.15	2175
Medina County—		
Marine Trust Co., Ross A-28	5	323
R. E. Cain et al, Blanton 1	*	2607
Monrow County—		
A. E. Robinson et al, Miracle 1	*	1785
Noble County—		
Patton, Shilding 12	2	1760
Seneca County—		
Stevens & Kiner, A. Abbot 1	*	2000
Washington County—		
S. S. Stewart, Smith 1	3	1072

Oklahoma

Caddo County —		
Johnson et al, Ackaman 1, se ne nw sw 3-5n-9w	100	4762
Ohio, Pau-Kune 13, nw nw sw se 3-5n-9w	5029	3465
Stephens, Youngblood 1, swc se 15-6n-10w	*	3170
Carter County—		
Magnolia, Gillispie 2, ne sw nw 33-1s-3w	14	3700
Batson, Williams 1, swc ne 20-4s-2w	38	1830
Shell, Horton 26, sw nwc se 6-4s-3w	*	1243
Cleveland County—		
Delaney, Fortman 1, nw sw sw 12-7n-2w	*	7756
Comanche County—		
McKey, Truitt 6, nw ne sw se 26-2n-11w	1	230
Creek County—		
Tilley Drlg. Co., Wright 2, nw ne se 17-17n-8e	25	2339
Waite Drlg. Co., Garrett 1, ne nec 25-14n-10e	*	3188
Thomas, Charbonett 1, sec 36-18n-9e	20	1918
Dunn et al, Anthis 4, se ne se 34-14n-10e	50	3193
Garfield County—		
Champlin, Gibson 1, se ne se 25-23n-4w	¶4	5145
Grady County—		
McCasland, Costello 1, sw sec 21-3n-5w	72½	2430

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Jackson County—		
Mathes et al, Inkelburger 1, sec sw 3-1n-20w	25	1590
Gulf, Kelly 10, sec ne 10-1n-20w	27	1470
Kiowa County—		
Shell, Ratliff 2, sw se ne 19-7n-17w	1086	1128
LeFlore County—		
LeFlore G. & Electric Co., McCalip 4, c se se 5-8n-25e	*	2621
Lincoln County—		
Tiger Mountain Oil Co., Graver 1, ne se nw 5-14n-3e	*	4460
Wilcox, School Land 8, nw sw se 16-14n-6e	75	3100
Okfuskee County—		
Burke-Greis, Butler 1, sec ne 19-10n-10e	¶2	3259
Oklahoma County—		
Barnsdall, Foraker 1, nw sw nw nw 26-12n-3w (6413 ft)	¶3.2	6218
Okmulgee County—		
Chain, Rentie 1, se se sw nw 5-14n-14e	15	1666
Osage County—		
Mason, 7, nw ne sw nw 3-24n-12e	*	1770
Pontotoc County—		
Sinclair Prairie, Moody "B" 6, se nw nw 22-2n-7e (otd 3878 ft)	10	1410
Chism, Fee 2-A, ne sw se 3-4n-7e	5	593
C. & R. Drlg. Co., Scroggins 1, nec sw 34-5n-7e	¶4.6	2440
Sinclair Prairie, Rolls 15, se se ne sw 28-5n-8e (gas input)		830
Pottawatomie County—		
Mudge, Baptiste 1, nec 20-7n-4e	40	3567
Sinclair Prairie, Galbreath 1, nw se se 25-7n-4e (otd 4311 ft)	10	4355
Smith, Brandenberg 1-A, swc se 34-8n-4e	131	4210
Seminole County—		
Campbell, Sudie 1, sw nw se 28-9n-6e	54	2562
Amerada et al, Newell 2, ne se nw 3-10n-5e	278	4632
Stephens County—		
Helmerich & Payne, Hefner 1-A, nec sw 12-1n-5w	1500	5800
Magnolia, Green 11, nw ses nw 13-1s-4w	*	3728

Pennsylvania

Bradford District—		
Miller Bros. et al, fee	4	....
E. E. & H. H. Harter, fee	½	....
Glenn McCool et al, Wright	2	....
Grant & Mohan No. 3, Bing 4 86-7	1	....
W. A. Bolles, Baum	1	....
N. V. V. Franchot, Campbell	2	....
Messer Oil Corp., Redfield	5	....
Bell & Loop, Hoffman	1	....
Forest Pet. Corp., 3 wells	3	....
Niagara Oil Corp., 3 wells	3	....
Bradford Transit Co., 9 wells	9	....
BRADFORD DISTRICT (WATER INTAKE WELLS)		
Pine Run Oil Co., Bing 131-2-3-4-6, 5 wells	..	....
Mix Creek Oil Co., fee	..	....
Forest Oil Corp., 2 wells	..	....
Forest Pet, Corp., 2 wells	..	....
Niagara Oil Corp., 5 wells	..	....
Middle District—		
G. L. Rhodes et al, Rhodes	2	....
H. G. McComb Son et al, William Frost	½	....
MIDDLE DISTRICT (WATER INTAKE WELLS)		
Cities Service Co., Hamilton	..	....
Butler Armstrong District—		
John Nicklas, John Nicklas	1	....
M. B. Finnessy estate, Marshall	2	....
SOUTHWEST PENNSYLVANIA		
Armstrong County—		
E. Young et al, Blair 1	¶.09	3494
Indiana County—		
T. W. Phillips G. & O. Co., White 1	¶.03	3537
Tyock 1	*	3331
Washington County—		
Williams et al, Buchanan 6	5	1038

South Dakota

Harding County (Camp Crook)—		
State Royalty & Pet, Co., State 1, sw ne 35-18n-1e	*	7918

West Texas

Andrews County (Means)—		
Humble, J. S. Means 74	1056	4490
Crane County (Sand Hills) —		
Humble, J. B. Tubb 35	3418	4420
Ector County (Foster)—		
Atlantic Ref. Co., Henderson 7	1893	4200
Broderick & Calvert, Witcher 18	1754	4170
Midland Drl. Co., Henderson-Humble 5	1954	4269
Schermerhorn Oil Corp., Johnson-Amerada 6	678	4187
Stanolind, E. F. Cowden 41-A	812	4205
T. B. Griffin 2	186	4310
J. E. Witcher 35	1175	4170
Ector County (Goldsmith)—		
Gulf, Goldsmith 243	1309	4207
Goldsmith 248	1276	4228
Goldsmith 249	376	4194
Phillips-Pure, Cowden 73	1334	4182
Ector County (Jordan)—		
Atlantic, University 7-B	342	3650
Gaines County (Seminole)—		
Atlantic, Riley 1-B-a	691	5266
Skelly, Mann 1	875	5245
Howard County—		
Shasta Oil Co., Texas Land & Mtg. Co. 14	1328	2820
Loving County (Wheat)—		
Sinclair Prairie, Wheat 5-C	115	4350
Pecos County (Wildcat)—		
Phillips, Byrne 1-a	*	1704
Scurry County (Sharon)—		
J. B. Stoddard et al, McClure 7	157	2466
Terrell County (Wildcat)—		
E. M. Thomasson Prod. Co., F. C. Bates 1	*	1830
Ward County—		
O. E. Schkade et al, Texas Cotton Ind. 1	*	2045
Winkler County (Halley)—		
Skelly, Halley 37	2553	2867
Winkler County (Keystone)—		
Harding & Morgan, Jenkins-Gulf 4	424	3476
Yoakum County (Wasson)—		
Anderson-Prichard, Willard-Spearman 1-805	1404	5157
Continental-Helmerich & Payne, Dowell 4-A	806	5090
Honolulu Oil Corp., Hovencamp 1-890	2012	5113
Humble, H. O. Wooten 24	758	5135
Shell, Baumgart 12-C	1236	5134
E. C. Brand 1-B	1060	5067
Skelly, Kendrick 3	982	5140
Tide Water Associated, Kendrick 4-A	949	5100

South Texas

CORPUS CHRISTI DISTRICT

Calhoun County—		
Falcon Seaboard, Williams 3 (Heyser)	375	5490
Colorado County—		
Davis, McLane 1-A (WC), (Garwood)	*	10,536
Jackson County—		
Humble, Toney 7 (West-Vanderbilt)	1250	5560
Magnolia, West 40-A (West-Vanderbilt)	950	5125
West 47-A (West-Vanderbilt)	1300	5135
West 48-A (West-Vanderbilt)	1350	5150
Texas, Mauritz 2 (Ganado)	80	5109
Jim Wells County—		
Heyser and Heard, Garcia 2 (Ben Bolt)	650	5417
Myer and Simons, Shear 3 (Magnolia City)	¶10 & 50	5692
Taylor, Reed 1, 6 mi nw Orange Grove (WC)	*	5008
Kleberg County—		
Pure, State 1 (169) (Bird Island)	¶10 & 50	7572
Live Oak County—		
Baker, Herring 1 (WC), 3 mi s of Whitsett	*	1950
Hagan and Stewart, Reagan 1 (WC), 2 mi ne of Calliham	*	1172
Nueces County—		
Shield, Nichols 1 (WC), (Robstown) ¾ mi w of Robstown field	*	5810
Union, Ribers A-5 (Agua Dulce)	1625	5023
Refugio County —		
Benson and Jones, Rooke B-3 (La Rosa)	550	6359
Morgan and Andrade 111, Rooke 3 (La Rosa)	600	5748
Quintana, Heard 12 (Tomoconnor)	1750	5925
San Patricio County—		
Abbott and Traxlor, Davis 1 (McCampbell)	250	7465
Houston, Baldwin 8 (East White Point)	650	5678
Killam, Taft Syndicate 8 (East White Point)	525	5612
Plymouth, Graybill and Heflebower 1 (East White Point)	550	5672
Republic, Rachal 28 (East White Point)	500	5610
Victoria County—		
Hardin, Baass 1 (Victoria)	600	3044

LAREDO DISTRICT

Duval County—		
Andrus, Reed and Beason, Petters 3 (Rancho Solo)	51	1868
Continental, Collings 12 (Hoffman)	216	2676
Driscoll 45-A (Driscoll)	200	3372
Driscoll 2-C (WC), nw of Driscoll field	*	2332
Cox and Hamon, Gorman-Hoffman 3 (119), (Tarancuas)	251	2031
Humble, Duval County F-1 (Cedro Hill)	154	1444
Duval County F-2 (Cedro Hill)	49	1437
Duval County F-3 (Cedro Hill)	50	1436
Landreth, Caballero 1 (WC), 4 mi nw of San Diego	*	5550
Westland, Graham 2 (Chiltipin)	*	4824
Jim Hogg County—		
Colorado Octane, Martinez 5-C (Colorado)	225	3038
Daubert and Achning, Vela 1 (WC), 7 mi ne of Randado	*	3265
Great States, Martinez 1 (B-1), (Colorado)	200	3061
Martinez 3 (2-B) (Colorado)	220	3011
Martinez 2 (B-4), (Colorado)	200	3093
Humble, Atwood 9 (Colorado)	89	3088
Atwood 10 (Colorado)	90	3077
Kelsey Bass 19 (Kelsey)	250	4749
Humble, Mestina 2 (4), (WC), C. and M. sur No. 389	*	6406
McMullen County—		
Ohio Fuel, Nueces Land 5 (Munson)	19	1201
Nueces Land 6 (Munson)	35	1208
Robertson, Nueces Land 1 (Munson)	*	1187
Scarborough, First National Bank Rosebug 1 (WC), 2 mi sw Calliham	*	1674
Starr County—		
Carrie, Ramierez 1-A (WC)	temp. abnd.	1607
C. M. Z. Seabury 2 (Zin-Seabury)	*	1402
Davis, Slick B-8 (Rincon)	500	4245
Dean, Starr Cattle Co. 1-M (Barbacos)	*	2868
Moss, Owen and Bishop, Hinojosa 3 (Ricaby)	*	1569
Sun, McKinney 7 (Sun)	400	4670
Montalvo A-3 (Sun)	450	5008
Webb County—		
Arkansas, Adami 8-A (Adami)	25	985
Adami 5-B (Adami)	51	996
Continental, Bruni 1 (WC), 1 mi sw of Aguilares	*	1841
Magnolia, Benavides 22 (Volpe)	65	2477
Massingill, Kirkpatrick 1 (WC), survey 321, block 1	*	2421
McClintock, Adami 4 (Adami)	47	981
Purvis, Adami 4 (Adami)	75	1002
Zapata County—		
Buffalo, Hinnant 28-C (Mirando Valley)	60	1999
Ogden, Volpe 1 (WC), 14 mi e of Zapata	*	1603
Sory, Bruni 1 (WC), J. V. Barrego Grant	*	995

SAN ANTONIO DISTRICT

Caldwell County—		
Crouch, Tiller 1-A, (Salt Flats)	85	2675
Ogden, Tally 2 (WC), 1 mi ne of N. Dale Field on Sun Farmout	temp. abnd.	2238
Frio County—		
Vanderweide, Witting 1 (WC), 3 mi ne of Shattel	*	5414

Texas Gulf Coast

Bammel—		
H. M. Harrell, Graves Estate 1	¶4	6240
Barbers Hill—		
Texas Gulf Prod., Wilburn 9	242	3899
Clear Lake—		
Humble, Humble-West Fee C-31	120	5904
Conroe—		
Cameron Pet. Co., Youens 1	*	5099
Dickinson—		
Humble, Kreisle 2	143	8870
Friendswood—		
Humble, Beamer 37	528	6042
Hardin—		
Humble, Partlow 15-A	458	7615
Woodley, Finley 1	194	7580
Lovall Lake—		
Shell, Nelson 1	181	7807
Stanolind, Steinhagen A-4	104	7842
Magnet—		
Humble, Cockburn 1	107	5540
Cockburn 19	96	5543
Markham—		
Powers Prod. Co., Myers 8	119	3560
Pickett Ridge—		
Texas Co., Pierce Estate A-34	*	5000
Segno—		
Jordan Dr. Co., Hughes 2-A	*	5454
South China—		
Titantic, Doornbos 1	*	8012
South Cotton Lake—		
Salt Dome, Lawrence 2-E-A	105	6481
Spindletop—		
Fitl Sheffield, Rowe 1	13	951
Thompson—		
H. M. Naylor, Mulvihill Estate 1	*	8300
Tomball—		
Humble, Rudel B-1	379	5568
Van Vleck—		
Skelly, Moore Estate 6	116	8495
Withers—		
Texas Co., Thompson A-17	49	5545
Harris County—		
Cities Service, Cook 1, West Ogburn area, H&TC No. 60	*	7588
Montgomery County—		
Sturn & Womack, Foster 2, Willis area, A. Pevehouse sur	*	7265
Wharton County—		
H. C. Cockburn, Reitz 1, s of El Campo, E. T. R. R. No. 59	*	6515

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Kilgore Area—		
Lone Star Oil Co., Griffin 4 (1.91-ac)	960	3546
John Wrather et al, I&GN Ry. Co. 9-A (11.7-ac)	864	3565
Longview Area—		
Atlantic, Duncan 29 (154.7-ac)	3500	3793
Atlantic & J. K. Wadley, Bander 16 (84.69-ac)	7500	3737
A. L. Slaughter et al, White Bros. 1 (34/100-ac)	4000	3525
Anderson County (Cayuga)—		
Tide Water Seaboard, Wills 1-C (201.11-ac)	¶27½	4088
Falls County—		
A. H. Bell et al, Garrett 2	21	1260
Leon County (Long Lake)—		
FHE Oil Co. et al, G. W. Burkett 1	¶115	5298

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Callahan County—		
Bond-Williams & Jones, Davis 1, sec 13	*	1300
Hinkle et al, Henderson 3	5	398
M. M. Little et al, B. Clinton 1	122	1725
J. D. Sandefer Jr. et al, Sprawls 1	*	1701
L. A. Warren et al, Clinton 1-C	*	1708
Coleman County—		
W. J. Murray et al, Dibrell 1	42	3129
Tinsley Oil Co., Webb 1	*	500
Comanche County—		
St. John & Choate, Ray 1	*	600
Eastland County—		
Groce et al, Rush 1, sec 130	*	1732
Erath County (Wildcat)—		
J. F. Morrissey Co., Sikes 1	*	1875
Jones County—		
Bridwell Oil Co., Carter 2	272	1922
Carter 3	*	1960
Butler-Horne Drl. Co., D. O. Huddleston 1	*	3059
Clyde O. Eastus et al, Martin 1 (pb to 1940 ft)	5	3240
Humble, I. N. Irwin 6	234	2395
Dee Humphrey et al, Bounds 1	30	3275
King Oil Co., Carter 10	325	1932
LeClair O&G Co., J. O. Bartlett 2	*	1668
C. Lancaster & Atkinson, Tiner 4	*	2552
Petroleum Producers Co., McKeown 2	271	1888
Wichita Prod. Co., Daughtry 5	237	1888
Jones County (Wildcat)—		
Danciger O&R, Inc., Nelson 1	*	3344
Shackelford County—		
Craighead et al, Fincher 1	*	807
Georgian Corp., Balch 12	8	603
Balch 14	10	597
L. F. Hooker et al, Walker 3-B	*	468
Iron Mt. Oil Co., Coker 3	*	3244
Loggie & Arendt, Ghio 10	5	600
Martin & Sons, Davis 8, sec 220	40	1707
Roeser-Pendleton, Inc., Cook 2-B, 113	¶2¼	1562
Cook 3-B-113	322	1568
West & Honea, Martin 2	5	3180
Yates & York, Huskey 1, sec 527	*	510
Shackelford County (Wildcats)—		
DeGrazier et al, Ghio-Harbough 1, sec 1563	*	3894
L. A. Long-R. Wolfe (was Gordon et al), Snyder 1	*	4293
Stephens County—		
Grace & Wood, Beatty 1	12	3658
Taylor County—		
S. B. Roberts Co. et al, Bowles 2	91	1745

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
Blackwell O&G Co., Wilson-Christie 6	1408	4370
Blackwell-Helmerich & Payne, Inc., Wilson 8	960	3828
Cities Service, Wilson 26-C	1144	4400
Bert Ligon et al, Anderson 2	*	4450
Anderson 6	496	4426
Louis Sikes et al, Anderson 8	432	4422
Archer County—		
W. B. Hamilton et al, Ikard 4-C	30	1172
Pace Pet. Co., Abercrombie 30-B, blk 156	10	1020
Perkins & Cullum, Abercrombie 23, blk 157	10	1018
Rancho Oil Co., Prideaux 14, blk26	9	659
Louis Sikes et al, Anderson 2-B-S	*	615
Baylor County (Seymour)—		
British-American, Green 6-D	822	2592
Baylor County (Wildcat)—		
Hall-Jordan Oil Co. et al, Blackman 1	*	5522
Clay County (Halsell)—		
Bridwell Oil Co., F. Halsell 2-A	744	4805
Clay County—		
L. T. Burns et al, E. H. Hamilton 2, blk 83	308	1121
C. W. Clark, Tr., Shumake 13, blk 4	*	1180
E. N. Costley et al, McInness 2, blk 58	158	1090
Taylor 3-D, blk 42	296	1074
Taylor 4-D, blk 42	272	1074
Taylor 5-D, blk 42	304	1073
Taylor 2-E, blk 36	*	1180
C. L. Gannaway et al, L. Goetze-Texaco 1, blk 2	6	338
Riner-Fain & Stilley, E. H. Hamilton 1, blk 83	*	1313
Texas Co., W. F. George 4	*	237
Clay County (Wildcats)—		
E. N. Costley et al, W. J. McInness 1	129	1090
Ted Norwood et al, Cheeves-Turner Oil Co. 1	*	1197
Cooke County—		
Shaw Oil Co. et al, TCU 2	72	1144
Jack County—		
J. D. Thweatt et al, Prideaux 2	*	715
Throckmorton County—		
Falls Prod. Co., Graham 13	¶½	1037
Wichita County (K-M-A)—		
Bonner Co.-R. O. Harvey, Munger 3	496	3875
Consolidated Oil Co., Barnes 3, sec 9	624	4003
E. C. Oil Co., Burnside 6	504	4060
Mangold 23, blk 35	1080	3826
W. H. Hammon-Hanlon & Buchanan, Hammon 5	1280	4060
Sunray Oil Co., Denny 4	552	3849
Tide Water Associated et al, Pettit 23	1112	3872
Wichita County—		
Panhandle Ref. Co., Allingham 1, sec 32	*	2001
Wilbarger County—		
W. H. Hammon-Hanlon & Buchanan, Owens 2	704	2861
Young County—		
Cable Oil Co., Snider 46	9	596
L. A. Long & Ray Oil Co., Bills 4, sec 1971	536	2781
Travis Oil Corp., Ford 2, sec 1971	309	2791
E. D. Willis et al, McCloud 1, sec 1395	11	903

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Texas Co., T. J. Bonney-Magnolia 18	506	3150
Gray County—		
Gulf, Merten 3	165	3295
Humble, Haggard 9	134	3247
Haggard 10	227	3246
King Oil Co., H. Horner 11	570	3260
Skelly, Schafer 104	398	3285
Hutchinson County—		
Gulf & Panhandle, Dial 94	325	3005
McIroy Oil Co., Haile 12	669	3035
Phillips, Whittenburg-Gary 12	167	3304
R. E. Thompson 12	222	3288
Power Pet. Co., Haile 7	368	3045
Cy Rieger et al, W. E. Herring 1	92	3193
Stanolind, E. E. Watkins 23-A	335	3036
Harry Stekoll et al, J. A. Whittenburg 11	20	3056

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
Cambridge G. Co., Price 5	¶.40	3583
Cabel County—		
R. H. Adkins, Lacy 1	¶.17	2336
Calhoun County—		
McIntosh & Grimm, Marshall et al 1	¶.25	2048
Gilmer County—		
McCall Drilling Co., Stout 8	¶.03	3355
Jackson County—		
Joe Rubin et al, Morrison 1	¶.40	4787
Kanawha County—		
Alpha Gas Co., Legg 2	¶3.02	5016
Owens-Libby-Owens, Siler Coal Land 6	¶.09	4209
Lincoln County—		
Garrett Gas Co., Alford 1	¶.10	3650
Pleasants County—		
L. C. White & Son, Barnhart 1	1	1754
Ritchie County—		
Square Oil Co., Carpenter 5	30	2024
Cabel County—		
Merritts Creek Gas Co., Foundation Realty 1	¶.65	3028
Gilmer County—		
Nutter, Wolf 1	¶.21	1685
Hope Nat. Gas Co., Roberts 2	¶.50	2019
Kanawha County—		
Mullins Gas Co., Fisher 1	¶2.50	5186
West Virginia Gas Corp., Gaines 1	¶1.62	5015
Linden Drilling Co., Robinson 1	¶1.05	1708
Owens-Libby-Owens, Siler Coal & Land 560	¶.11	4339
Ritchie County—		
Mole Hill O&G Co., Darnell 4	2	1054
Moon Gas Co., McMullen Hrs. 2	¶.10	1910
Wood County—		
Mellinger O&G Co., Marshall 2	1	1674

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Niobrara County (Lance Creek)—		
Continental Oil Co., Apex 5, OPC-2, ne ne sw 34-36n-65w	1920	5597
Tom Bell 17, se se ne 33-36n-65w	481	5300
Minnelusa Oil Corp., Joss 1-B, ne sw nw 7-35n-65w	2400	5439
Ohio Oil Co., Cash 4 OPC-1, nw ne sw 4-35n-65w	1872	5499
Continental Oil Co.'s Rodeo 3 OPC-4, se ne ne 35-36n-65w	180	4315

*Failures; †Junked; ¶Million cu. ft. gas.

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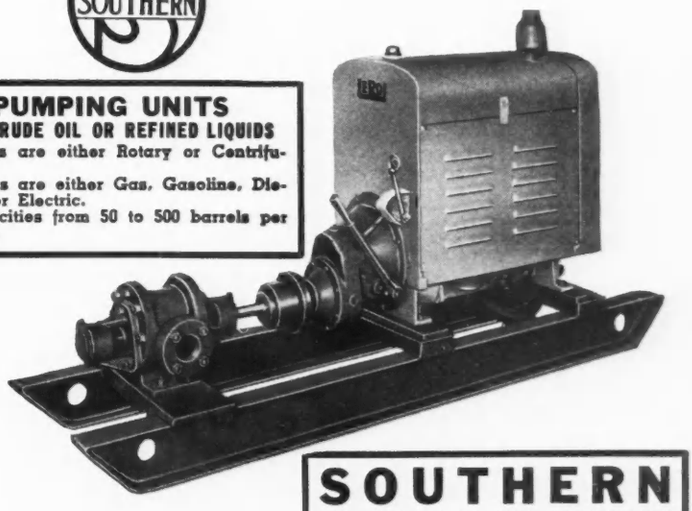

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WILDCAT REPORT
New Starts and Completions

ARKANSAS
FIRST REPORT

Miller County—Standard Oil Co. of La., W. P. Sturgis 1, c nw se 1-17-27, moving in materials.

CALIFORNIA
FIRST REPORTS

Orange County—United Oil's Schimming 1, 1349 ft s 153 ft e c/ls Kavella and Stanton streets, nwc 25-4-11, Stanton area, rig.

Kern County—H. C. Trigg's 1, 600 ft s, 700 ft e w¼ c 11-25-18, Devils Den area, dr. Franco-Western Oil's 17, 1540 ft s, 620 ft e nwc 8-30-22, McKittrick area, lcn.

San Luis Obispo County—Holly Oil's Meherin 1, 650 ft n, 1500 ft e swc 7-32-13, Arroyo Grande area, rig.

SOUTH DAKOTA
COMPLETION

Harding County—State Royalty & Petroleum Co.'s State 1, sw ne 35-18n-1e, Camp Crook structure, abnd 7918 ft.

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ILLINOIS
FIRST REPORTS

Coles County—Carter Oil Co.'s Seaman 1, c nw ne sw 35-12n-7e, rig.

Fayette County—John Pummill's Isabell 1, c nw ne sw 33-8n-1w, rig.

Lawrence County—Kentucky Natural Gas Co.'s Crews 1, c ne sw 30-4n-10w, loc.

Montgomery County—Henderson's Unknown 1, c sw se sw 19-10n-4w, rig.

COMPLETIONS

Clinton County—L. C. Thorp's R. Merton 1, ne ne sw 28-2n-1w, Meridian tnp, top Benoist 1413 ft, abnd 1460 ft.

Gallatin County—Skelly Oil Co. & Exchange Oil Co.'s Hale-Hugh 1, ne ne ne 21-7s-9e, Asbury tnp, top St. Louis 3080 ft, abnd 3100 ft.

White County—J. W. Carter's O. Johnson 1, sw nw ne 25-6s-8e, Indian Creek tnp, top Hardinsburg 2485 ft, flowed 637 bbls oil natural to open new pool and give state its first production from this horizon, td 3528 ft.

KANSAS
FIRST REPORTS

Cowley County—C. L. Carlock's Daniels 1, swc ne 22-30-4e, lcn, Morgan Petroleum Co.'s Dunn Estate 1, swc se 2-35-5e, pits.

Dickinson County—Midland Oil Co.'s Utech 1, swc nw 35-16-4e, machine.

Reno County—Dutton et al's Green 1, sec 8-23-4w, dr.

Stafford County—Atlantic Refining Co. et al's Coen 1, nwc ne 15-23-14w, rur.

COMPLETIONS

Cowley County—Crown Petroleum Co. et al's Dunn 1, nwc se 19-34-6e, 1½ mi e Rann pool, top Cherokee 2850 ft, top Bartlesville 3003 ft, top Mississippi 3084 ft, so 3084-88 ft, abnd 3140 ft.

Ellsworth County—Phillips Petroleum Co.'s Sturn 1, sec nw 36-17-10w, 2½ mi se Stoltenberg pool, top Lansing 2914 ft, top Conglomerate 3232 ft, top Arbuckle 3316 ft, abnd 3335 ft.

Stafford County—Shell Oil Co.'s Smith 1, sec nw 9-21-11w, 1½ mi sw Snider pool, now called Snider-Simpson pool, top Lansing 3137 ft, top Arbuckle 3403 ft, top Simpson 3365 ft, 36 shots 3363-71 ft, td 3388 ft, 378 bbls 43.9 gr.

SOUTH LOUISIANA
FIRST REPORTS

Acadia Parish—Vincent & Welsh's Nichlas 1, Richie area, 1480 ft n and 1022 ft e of swc of sec 21-7s-1w, ru.

Beauregard Parish — Loffland Brothers' Long Bell Lbr. Co. 1, s of Merryville, 330 ft fr n line and 990 ft fr e line of sec 24-5s-11w, lcn.

NORTH LOUISIANA
FIRST REPORTS

Bossier Parish—Louis K. McGuffin, Garland 1, se se se 16-18n-11w, materials.

LaSalle Parish—H. L. Hunt, La. Central Lbr. Co. 9, ne ne 13-10n-2e, materials.

MICHIGAN
FIRST REPORTS

Allegan County—L. E. Quade's Scarlett 1, nw se ne 27-3n-16w, lcn.

Bay County—L. C. MacGregor's Hass 1, ne ne 29-18n-3e, rig.

Kent County—Smith Petroleum Co.'s McDonald 1, nw nw sw 30-5n-9w, dr.

Missaukee County — McClanahan & Rowmors' Quist 1, nw nw 22-21n-7w, rig.

Montcalm County—Belvidere Oil Company's Huyck 1, sw sw 31-12n-6w, rig.

Ottawa County—Dapar Oil Company's Powers 1, sw ne nw 28-8n-13w, dr.

COMPLETIONS

Allegan County—V. Leonard Oil Company's Detchemendy 1, ne ne nw 19-1n-12w, Traverse 1525 ft, td 1683 ft, abnd.

Clare County—Sun Oil Co.'s State-Redding A-1, c s½ sw nw 11-19n-6w, Berea 1401, oil 1411-23 ft, Monroe 3871 ft, td 3926 ft, pb to 1425 ft, shot 20 qts nitro, pumping 2 bbls oil and 2 bbls water.

Gladwin County—Sun Oil Company's Tubbs 1, c w nw sw 2-18n-2w, Dundee 3825 ft, td 2916 ft, abnd.

Oceana County—C. W. Teater's Cartier 1, e s sw sw 31-16n-15w, abnd 2090 ft.

NEW MEXICO
COMPLETIONS

Chaves County — Harvey E. Yates et al's Johnson 1, c ne nw 24-15s-28e, elev 3712 ft, top salt 175 ft, top lime 2190 ft, pb from 3285 to 1500 ft, initial 800,000 ft sweet gas daily open casing from sand 1465-75 ft.

Eddy County—C. B. Buck et al's State 1, swc 31-16s-29e, elev 3660 ft, oil pay 2120-48 ft, pb from 2652 ft and shot 130 qts nitro 2110-48 ft, pumped 45 bbls oil.

OKLAHOMA
FIRST REPORT

Okfuskee County—Burke-Greis' Dew 1, nec 9-12n-9e, dr.

EAST TEXAS
FIRST REPORTS

Limestone County—Zephyr Oil Co. et al's Carrie Peeples 3, 2500 ft from e and 4500 ft from n lines of R. Scott sur, 2 mi sw Tehuacana, 700 ft s Peeples 2 (dry at 2650 ft), rig.

Robertson County — Rhett Wilder et al's Moise Cerf 1, 150 ft due s of swc of Hugh Henry sur, but in J. Erwin sur, 7 mi s Franklin, sp and sd.

Trinity County—Davis & Co. et al's Texas Long Leaf Lumber Co. 1, 467 ft out of sec of ne 80 acres of 320-acre tract, or 1800 ft from n and 467 ft from e lines of A. Henry sur, 9 mi n Trinity, rur for Wilcox test.

NORTH TEXAS
FIRST REPORTS

Cooke County—Big Indian Oil & Dev. Co.'s T. E. McFadden 1-B, 450 ft from n and 1540 ft from w lines sec 1, E. T. Ry. sur A-365, dr 1730 ft.

Jack County—M.L. Whitsett et al's Mary Hoefle 1, 600 ft n and 300 ft w of m/e/se cor John W. Barnett sur A-48, 3 mi se Antelope, sd 462 ft.

Montague County—Gibson & Jennings, Inc.-Sinclair Prairie Oil Co.'s D. T. Holt 1-C, 220 ft out of nwc sec 36, Kaufman County School Lands A-407, lcn.

Wichita County—S. H. Fagadau et al's A. D. Pitts 1, 2906 ft from n and 330 ft from 3 lines H&TC sec 4, blk 7, mim for 4050-ft test.

COMPLETIONS

Baylor County—Hall-Jordan Oil Co.-W. B. Omohundro's D. E. Blackman 1, c se ne H&TC sec 28, blk 3, abnd 5522 ft.

Clay County—E. N. Costley et al's W. J. McInness 1, 150 ft from n and 150 ft from sw lines blk 58, Byers Bros. subdiv, oil sand 1073-90 ft, pumped 129 bbls initial. Ted A. Norwood et al's Cheeves-Turner Oil Co. 1, 150 ft from n and 670 ft from e lines blk 54, Bacon subdiv, abnd 1197 ft.

SOUTH TEXAS
FIRST REPORTS

Duval County — G. W. Bason's Adami 1, 206.32 acre tract, survey No. 341, 20 miles nw Freer, lcn. P. R. Rutherford and R. S. Waldron's Driscoll 1, U-Lot survey No. 243, 11 miles w Benavides, lcn.

Jim Hogg County—Wheelock & Collins' Palacios 1, blk 19, G. D. Duce sur No. 287, 1 mi e of Randado field, lcn.

Jim Wells County—Henshaw Bros.' Gaither 1, 328 acre tract, Los Presenos de Arrita Grant, 1 mi s Al Smith, rigging up.

Karnes County—R. W. Ford and Crown Central Petroleum Corp.'s Jendrusch 1, 75-acre lease in E. Seguin Grant, 1½ mi sw Falls City, lcn.

Live Oak County—H. F. Baker's Saunders 1, 220.4 acre lease in Stephen Hays survey, 2½ mi w Whitsett, lcn. A. Van Desar's Brown 1, 8½ mi w of Whitsett, lcn.

Refugio County—H. J. Porter's Morrow 1, Edward Perry sur, Abstract 48, Barnsdall-Farmout, 3 mi nw Fagan field, lcn.

Starr County—Sun Oil Co.'s W. G. Lehr 1, section 513, 8 mi sw Sun field, lcn.

Webb County—Starrett & Leighty's Adami 1, 106.4 acre lease, Share 8, section 9, 18 mi n Freer, lcn.

COMPLETIONS

Caldwell County—Ralph R. Ogden's Tally 2, 1 mi ne of N. Dale field on Sun Oil Co. farmout, temporarily abandoned, may rework and put on pump, at 2238 ft.

Colorado County—W. R. Davis & Co.'s McLane 1-A, Garwood area, abnd 10,536 ft.

Duval County—Continental Oil Co.'s Driscoll 2-C, northwest Driscoll field, abnd 2332 ft. Landreth Production Co.'s Caballero 1, 4 mi nw San Diego, abnd 5550 ft.

Frio County—Sam Vanderweide et al's Witting 1, 3 mi ne Shattel, abnd 5314 ft.

Jim Hogg County—Daubert & Achning's

Vela 1, 7 mi ne Randado, abnd 3265 ft. Humble Oil & Refining Co.'s Mestina 2 (4), survey No. 389, Fowler and Rankin subd, abnd 6406 ft.

Jim Wells County—R. K. Taylor's Reed 1, 6 mi nw Orange Grove, abnd 6008 ft.

Live Oak County—H. F. Baker's Herring 1, 3 mi s Whitsett, abnd 1950 ft. Hagan & Stewart's Reagan 1, 2 mi ne Callihan, abnd 1172 ft.

McMullen County—C. D. Scarborough's First National Bank 1, 2 mi sw Callihan, abnd 1674 ft.

Nueces County—Shield Oil Co.'s Nichols 1, ¾ mi w Robstown field, abnd 5810 ft.

Starr County—Carrie Oil Co.'s Rameriz 1-A, 10 ft s of No. 1 replacement hole, temp. abnd 1607 ft.

Webb County—Continental Oil Co.'s Bruni 1, 1 mi sw of Agulares, abnd 1841 ft. M. L. Massingill's Kirkpatrick 1, survey 321, abnd 2421 ft.

Zapata County—Ralph R. Ogden's Volpe 1, 4 mi w of Comitas field, abnd 1603 ft. Sory's Bruni 1, block 25, abnd 895 ft.

TEXAS GULF COAST

COMPLETIONS

Harris County—Cities Service's Cook 1, West Ogburn area, 990 ft s and 990 ft e of center sec 60, H&TC sur, abnd 7588 ft.

Montgomery County—Sturm & Womack's Foster 2, Willis area, 466 ft out of easterly sec of 380-ac tract, A. Pevehouse sur, abnd 7265 ft.

Wharton County—H. C. Cockburn's Reitz 1, s of El Campo, 330 ft out of nec of E. T. R. R. No. 59, abnd 6515 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Callahan County—N. D. Gallagher et al's E. Grissom 1, 220 ft from s and 150 ft from e lines S. P. sec 2, blk 8, sp. Grisham-Hunter Corp.'s K. B. Leggett 1, 2020 ft from s and 1650 ft from e lines S. P. sec 7, blk 8, sp. R. Hickman et al's A. Hickman 1, 2500 ft from n and 2825 ft from e lines sec 120, BBB&C Ry. sur, dr 250 ft. H. W. Lee et al's Ross 1, 220 ft out of sec n½ sw¼ sec 98, BBB&C sur, lcn. A. L. Thomas et al's Abram 1, 480 ft from n and 1575 ft from w lines sec 1, BBB&C sur, machine.

Coleman County—Anzac Oil Corp.'s J. P. McCord 1, 2196 ft from s and 2200 ft from e lines sec 703, BBB&C sur, lcn.

Comanche County—J. M. Russell et al's P. Scott 1, se se sw H&TC sec 25, blk 2, lcn.

Hamilton County—Wallace & Vickers' C. E. Lund 2, c s½ of east 20 acres of n½ sw¼ R. J. Bailey sur No. 51, run cas 300 ft.

Taylor County—T. P. Coal & Oil Co.'s N. A. Reidenbach 1, 990 ft out of nwc lot 19, league 146, Grimes County School Lands, lcn for 3000-ft test.

COMPLETIONS

Erath County—J. F. Morrissey Co.'s Sikes 1, John Hargrove sur A-358, abnd 1875 ft.

Jones County—Danciger O&R Inc.'s P. V. Nelson 1, sw sw se sec 186, BBB&C sur, top Palo Pinto lime 3343 ft, abnd in water 3344 ft.

Shackelford County—Joe DeGrazier et al's Ghio-Harbough 1, sw sw nw TE&L Co. sec 1563, abnd 3894 ft. L. A. Long & R. Wolfe (was R. H. Gordon & Pethybridge's) C. B. Snyder 1, nec sec 38, L. A. L. sur, elev 1501 ft, top Caddo lime 3605 ft, top Ellenberger 4268 ft, abnd 4293 ft.

WEST TEXAS

FIRST REPORT

Crockett County—Moore Bros. Corp.'s F. R. Henderson-Sinclair 1-a, 990 ft from n and 1620 ft from w lines GC&SF sec 51, blk OP, twin lcn to 812-ft junked test, machine.

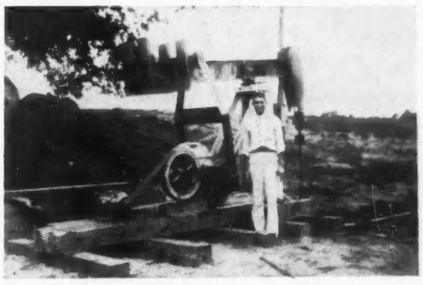
COMPLETIONS

Pecos County—Phillips Pet. Co.'s Mrs. Sara Byrne 1-a, near sec nw H&GN sec 114, blk 11, elev 2448 ft, oil saturation 1658-61 ft, shot 20 qts nitro 1648-58 ft and used 750 gals acid, no results, deepen to sul w 1675-1704 ft and abnd.

Terrell County — E. M. Thomasson Prod. Co.'s F. C. Bates 1, 1800 ft from n and 330 ft from e lines H&GN sec 31, blk 1, ½ mi se Pecos River, elev 2077 ft, abnd 1830 ft.

Grant permits for three Texas recycling plants

The Texas Railroad Commission has entered orders permitting the Lone Star Gasoline Company and Trinity Gas Corporation to operate recycling plants in Grapeland field, Houston County. In another order, Gulf Plains Corporation was granted a permit for a similar plant in the Agua Dulce field, Nueces County.



Up Michigan way this 8D JENSEN Unit operates a 1200' well for Clapp-saddle & Harris on the Pepper Lease near Bloomingdale. 5/8" rods, 2" tubing, 20" stroke, 200 barrels of fluid in 24 hours. Powered with a 3 H.P. Westinghouse motor.

IF YOU PRODUCE OIL

In every field in the United States there are men who can tell you about JENSEN Jacks—but they aren't likely to tell you unless asked.

So if you produce oil, and are looking around seriously for the most satisfactory and economical way to handle a well that won't flow, we urge that you wire us at Coffeyville or get in touch with our local dealer for information as to where JENSEN Units can be seen at work and the owners interviewed.

You'll be astounded that you could have overlooked anything that cuts costs like a JENSEN, and gets the job done so dependably.

JENSEN JACKS are made by the oldest and largest exclusive manufacturer of pumping equipment in the world, in sizes to handle wells of any depth from 500' to 6000'.

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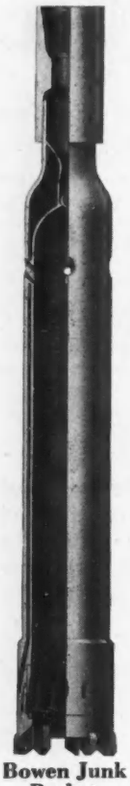
NOTES FOR THE Equipment Buyer and User

Junk Basket
S. R. BOWEN COMPANY

A new type junk basket for quickly and easily recovering small steel objects lost in the hole has been introduced by S. R. Bowen Company, Santa Fe Springs, California. The tool incorporates a unique principle of fluid circulation which provides inward fluid flow for washing the fish into, rather than away from, the center of the basket body. It permits full pump pressure to be applied.



Bowen Junk Basket

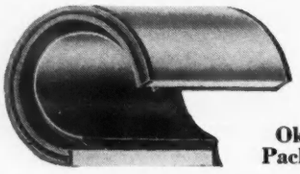
The junk basket consists essentially of a top sub, a combination inner and outer barrel having fluid ports, a ball valve, a junk catcher and a standard mill-type shoe. As the basket is run in the hole, full circulation is maintained through the center of the tool as well as side passages, thus keeping the barrel clean and free from heavy mud. Then, by simply dropping a steel ball down the pipe, the entire fluid flow is diverted through the side passages of the barrel. This forces fluid to flow outwardly and downwardly against the circumference of the hole where it is deflected from the sides in such a manner that all loose objects are washed to the center. The fluid stream, flowing to the center of the tool and up through it to return ports, creates a reverse circulating action so that, by opening the pumps to full capacity and rotating the tool on bottom, all material is forced into the center of the barrel where it is trapped and held by the core catcher. The mill quickly cuts a short core in the formation, further aiding in guiding the junk into the basket.

The Bowen Junk Basket can be obtained in a wide range of sizes for all holes up to 17 inches in diameter. Various assemblies are available for use on bottom of the tool.

Packing
TEXAS RUBBER & SPECIALTY CORPORATION

Texas Rubber & Specialty Corporation, Houston, Texas, has announced volume production of the improved Okeh patented self-sealing lip rod packing, the original self-sealing lip packing for this purpose. In the packing there are no metal parts to rust and cause sticking.

Okeh lip rod packing is a combination of hard outer rubber and soft abrasion-resisting rubber. It permits a seal at both ends of the packing, and



Okeh Packing

the manufacturer explains that it cannot be made up too tightly in the stuffing box.

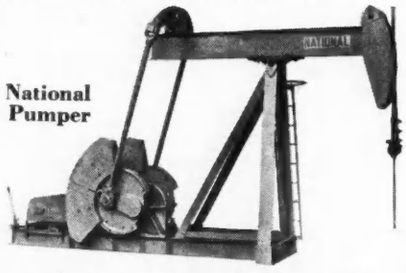
The lip seals in proportion to the pressure being pumped against it. The unit seals out abrasive fluid and thereby materially lengthens the life of the pump rods.

Fillet-Weld Gage
GENERAL ELECTRIC COMPANY

A new low-priced fillet-weld gage has been announced by General Electric Company, Schenectady, New York, to provide a fast, accurate means of checking the size of fillet welds on jobs that must meet rigid specifications. The new device, which slides readily into a shirt or trouser pocket and is of simple construction, consists of three stainless-steel stampings held together by a bolt and a knurled thumb-nut. Either convex, concave, or standard fillets can be checked merely by fitting the edge of the gage flush against the work so that the indicating portion of the gage rests on the weld bead.

Pumping Units
THE NATIONAL SUPPLY COMPANY

The National Supply Company, Toledo, Ohio, has added two new unit pumpers to its line. Known as TU304-HD30TB and TUS304-HD30TB, the units are designed for medium single well pumping service. Type TU304-HD30TB is made for installation on concrete foundations and has the reduction gear mounted directly on the frame. Type TUS304-HD30TB has the



National Pumper

same features and specifications as Type TU304-HD30TB except that a subbase between the frame and reduction gear provides the necessary height for counterweights to clear the bottom of the frame, so that installation may be made on derrick floors or on flat concrete pads.

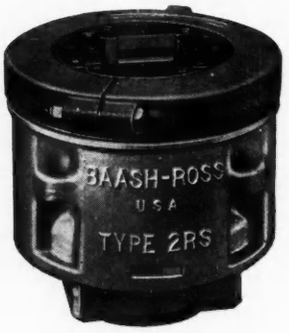
Both units have a maximum polished rod stroke of 48 inches and the safe load of walking beam is 12,750 pounds API. The API peak torque rating is 76,500 inch pounds at 20 strokes per minute and the overall gear ratio is 29.6. A fully equalized pitman assembly and roller bearing wrist pin housings are regular equipment. National Type B eccentric cranks and counterweights give infinitely and continuously variable adjustability, both in counterweight effect and degree of lag and lead. Counterweights are the one-piece type and are clamped in the desired position on the circular rim of the crank. Adjustment is by power, with no lifting required.

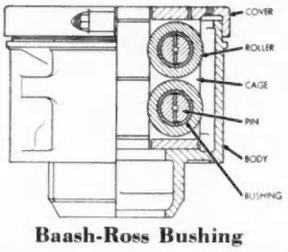
Tractor Engine

Caterpillar Tractor Company, Peoria, Illinois, has issued a folder on its 800-G engine, a unit that has been finding wide acceptance in oil fields for pumping service. The folder details construction features and gives specifications of the unit.

Kelly-Drive Bushing
BAASH-ROSS TOOL COMPANY

A new heavy-duty roller kelly-drive bushing, designated Type 2RS, has been announced by Baash-Ross Tool Company, 5512 Boyle Avenue, Los Angeles. Of heavy construction throughout, it has been designed especially for heavy torque loads and high rotation speeds of modern deep-well drilling.



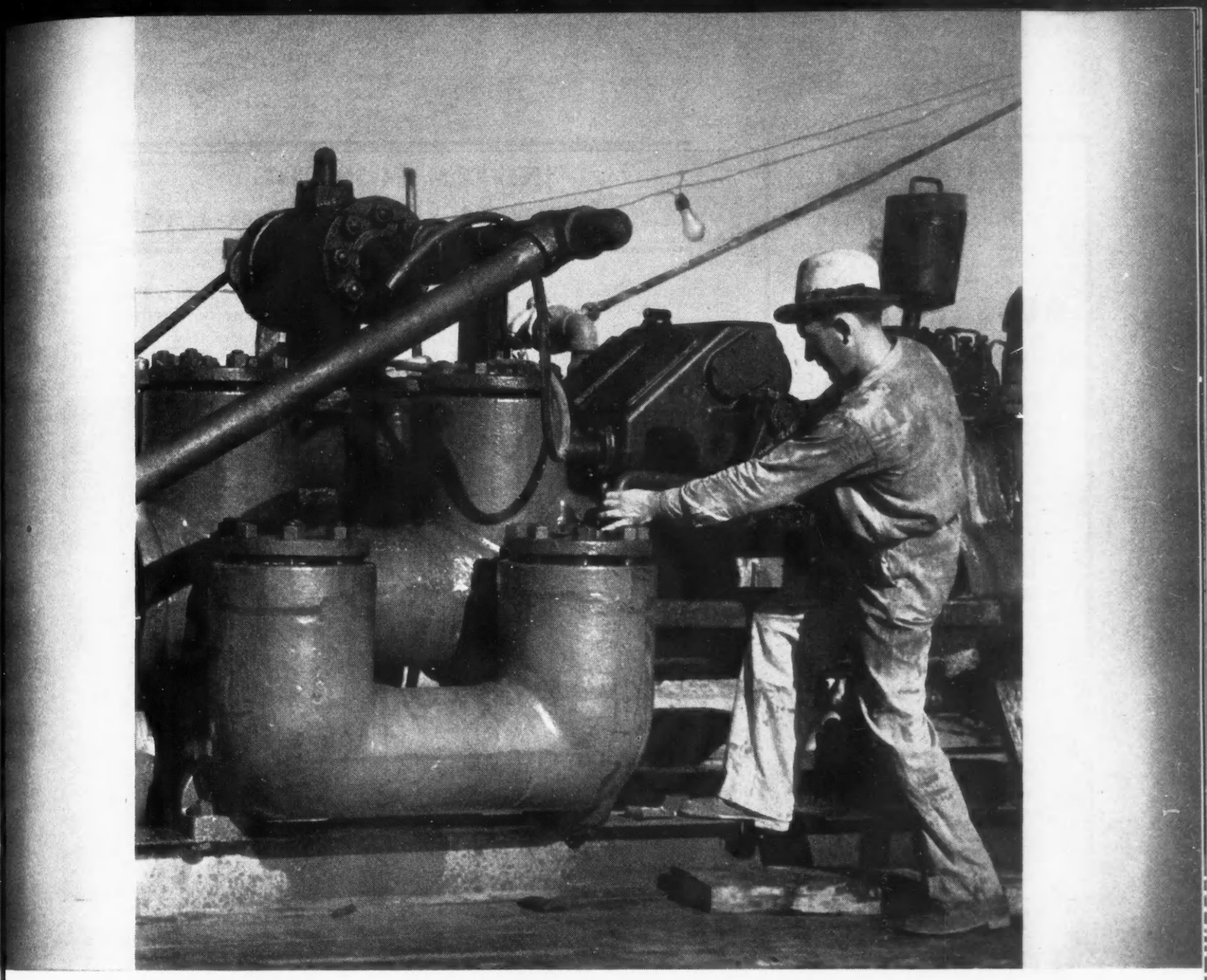


Baash-Ross Bushing

The driving surfaces of the kelly are contacted only by two extra-large diameter rollers, providing adequate contact area with the driving surfaces, reducing frictional resistance to feeding and preventing tearing or corrugating the kelly faces.

Torque loads are transmitted directly through each of the hardened driving rollers to a replaceable inner roller bushing which absorbs virtually all of the wear that occurs. The roller bushings in turn ride upon large diameter reversible roller pins which are case hardened and ground to minimize wear. When one side of the roller pins becomes worn, they can be reversed so that virtually double pin life is provided.

An advantage to this type of drive



BEARING THE BRUNT OF IT!

If a slush pump fails, even momentarily, the consequences are likely to be both serious and expensive. Every part of such pumps has its work cut out for it. But what with high pressures and the continuous flow of abrasive material it is the fluid end that gets the toughest assignment.

Slush pump fluid ends that are cast of Nickel-Molybdenum cast iron are proving consistently to be more than equal to the exacting requirements.

Due to the extra strength imparted by the Molybdenum content of the iron, it is possible to lighten the weight of the casting and still be assured of ample ability to withstand the pressure. And, in addition, Nickel-Moly iron has the hardness needed to resist the abrasive action of the cuttings passing through the pump.

Detailed information on Molybdenum irons used in drilling equipment will be found in our free technical book, "Molybdenum in Cast Iron".

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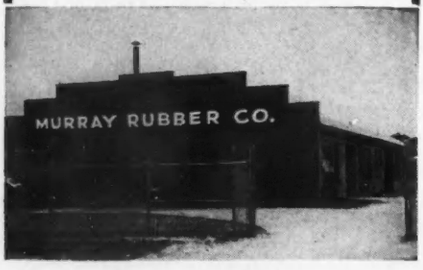

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NOTES FOR THE Equipment Buyer and User

bushing, according to the manufacturer, is that the roller action causes the kelly to feed through the rotary easily, allowing a more sensitive feed control, more accurate weight indications and freedom from binding. Also, the inner bushings and reversible roller pins provided in the design confines wear to the cheapest part of the roller kelly-drive bushing.

Beard Joins Tulsa Office of Jarecki Manufacturing Company

Eugene H. Beard has joined the Tulsa sales staff of Jarecki Manufacturing Company, St. Louis. Connected with the oil well supply business for many years, Beard started work in Eastern fields and later followed development to the Mid-Continent area.

EUGENE H. BEARD
With Jarecki Manufacturing Company

William A. Barr Named President Foote Bros. Gear & Machine

William A. Barr, former executive vice president and general manager of Foote Bros. Gear & Machine Corporation, Chicago, has been elected president of the company, succeeding F. H. Fowler, resigned. Barr joined the company as works manager in 1929, and for eight years was vice president in charge of manufacturing.

WILLIAM A. BARR
President, Foote Bros., Gear & Machinery Corporation

Williams & Kilsby Form Partnership on West Coast

W. Woodward Williams, who recently resigned as general manager of Babcock & Wilcox Tube Company, and Perry Kilsby, former West Coast sales representative for several steel product manufacturing firms, have formed a partnership known as Williams & Kilsby, with offices in Standard Oil Building, Los Angeles.

The firm will represent Babcock & Wilcox Tube Company, Beaver Falls, Pennsylvania; Sivyer Steel Casting Company, Milwaukee; William F. Klemp Company, Chicago, and Pittsburgh, Crucible Steel Company, Pittsburgh.

Welding Data

A guide to welding commonly used metals and alloys has been printed in chart form by The Linde Air Products Company, a unit of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York. Recommended welding method, flame adjustment, welding rod and flux for each of 30 different metals and alloys can be determined at a glance by referring to the outline. It has been designated Form 4464.

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NOTES FOR THE Equipment Buyer and User

Holden Sales Engineer for Texasteel Manufacturing

James R. Holden has been named sales engineer for the Texasteel Manufacturing Company.

After graduation from the University of Oklahoma, from which institution he holds a B.S. in M.E. degree, Holden was employed by the Gulf Oil Corporation as trainee engineer until January, 1939, when he accepted employment with the Rowan Drilling Company. He was employed in the engineering department of the Texasteel Manufacturing Company in September, 1939, and was recently advanced to his present position.

JAMES R. HOLDEN
Sales Engineer, Texasteel Manufacturing Company

Eastman Opens Division Office At Lafayette, Louisiana

Eastman Oil Well Survey Company has announced opening of a division office for Louisiana at Lafayette, with H. G. "Spec" Livingston as division manager.

Champion Rivet Company Arrange for Export

Champion Rivet Company, Cleveland, has appointed United States Steel Export Company, 30 Church Street, New York City, exclusive export agent for Champion welding electrodes.

Wood Preserving Corporation Establishes Yard Near Dallas

The Wood Preserving Corporation, Pittsburgh, has opened a new concentration yard at Grand Prairie, Texas, to serve the oil and building industries of the Dallas-Fort Worth area with Koppers pressure-treated lumber. The new unit augments warehouses at Houston and Texarkana, Texas, and at Alexandria, Louisiana, according to R. P. Jackson, company vice president.

Creosoted lumber stocked at the new yard was pressure treated at the Texarkana treating plant, one of 21 maintained by the company in various parts of the United States. J. B. Rochelle is sales representative at the new yard.

R. P. JACKSON
Vice President, Wood Preserving Corporation

Moore Steam Turbine Becomes Division of Worthington Pump

The Worthington Pump and Machinery Corporation, Harrison, New Jersey, has announced that its subsidiary, Moore Steam Turbine Corporation, of Wellsville, New York, is now being conducted as the Moore Steam Turbine Division of the corporation.

The Moore Steam Turbine Corporation was a wholly owned subsidiary of the Worthington Pump and Machinery Corporation for three years, during which the corporation's nation-wide sales organization and service facilities has increased the volume of steam turbine sales to a point where it has been necessary for the corporation to provide additional plant capacity.

C. A. Brokaw Returns From Hanover, Germany

C. A. Brokaw, of Eastman Oil Well Survey Company, has returned from Hanover, Germany, where for the past year he has been supervising controlled directional drilling and directional surveying for various German oil companies. He resumes his duties as office engineer of the Texas Gulf Coast division of the company at Houston.

Changes in Sales Personnel By Jones & Laughlin

Changes involving district sales offices in New York, Philadelphia, and on the Pacific Coast have been an-

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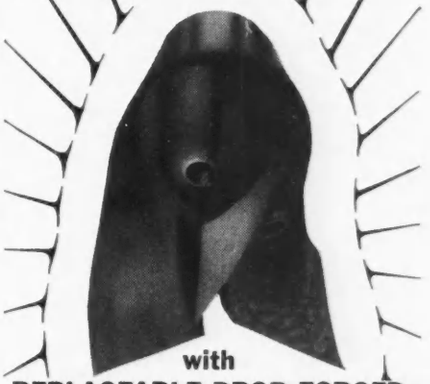
DRILLING BIT
THE INDUSTRY'S MOST ECONOMICAL DRAG TYPE BIT



with
REPLACEABLE DROP FORGED HEAT TREATED BLADES
for
LONGER LIFE
FASTER HOLE
MORE HOLE PER BIT
REED ROLLER BIT COMPANY

For Month In - Month Out Service
USE MacCLATCHIE "AIRFLOTE" MUD PUMP VALVES

Because of the sealed-in air chamber that increases buoyancy . . . cuts fluid slippage . . . reduces impact . . . and gives more efficient valve action, MacClatchie "Airflote" Pump Valves insure superior performance and longer life under the toughest pumping conditions. Replaceable bodies, reversible inserts and everlasting stem caps give true MacClatchie economy.

MacClatchie "Streamlined" Pump Valves give you *high* quality at *lowest* cost! Of solid one-piece construction, they're streamlined at every point to assure unobstructed fluid flow. Valve Seats (interchangeable with "Airflotes") have 20% to 100% *more* striking surface than others, PLUS patented cross-bar construction.

All MacClatchie Valves are guaranteed against cutting out the pump. *See our representative or write direct to factory for details on this guarantee.*

MacCLATCHIE MANUFACTURING CO.
COMPTON, CALIFORNIA
Mid-Continent Distributor, BAKER TOOL COMPANY, Houston, Texas
Rocky Mountain Representative, E. C. DILGARD, Casper, Wyoming
Foreign, GEORGE R. WOODS, 17 Battery Place, New York, N. Y.

MERLA

Experienced Men Available

Licensed under Boynton Patents

Insert Pump Anchors Packers Flow Valves Swabs

Yes! Experienced Merla representatives are available to you at all times . . . to make you an honest appraisal of your production problem . . . of whether our Flow Valves may help you to solve it . . . the best type of installation for you, if our equipment will serve . . . An HONEST refusal to spend your money, if we feel we cannot be of service to you. IF your well is adapted to Gas Lift, then chances are we have our valves in one like it . . . can furnish you with a recommendation quickly . . . supervise the installation . . . start the cash register to ringing again. You can't duplicate the Merla combination of the finest FLOW Valves . . . plus years of EXPERIENCE . . . plus LOWEST service costs. It will pay you to consult us on your production problems.

Send for your copies of the Merla Descriptive Booklets

See Pages 1642-1643 Composite Catalog

MERLA TOOL CORPORATION
Manufacturers of Oil Field Equipment
P. O. Box 2576 Dallas, Texas
Oil Field Engineering Sales Co. 710 Garfield Alhambra, Calif. Service in all Principal Mid-Continent Oil Fields

Standco
NO-SMOKE

STANDCO BRAKE LINING

Stands the gaff and gets the job done without scoring brake rims. See page 2100 Composite Catalog.

Standco Brake Lining Co.
HOUSTON

NOTES FOR THE Equipment Buyer and User

W. K. BREEZE

J. B. DeWOLF

H. B. SPACKMAN

nounced by Jones & Laughlin Steel Corporation, Pittsburgh.

William K. Breeze has been appointed Pacific Coast manager with supervision over the district offices at Los Angeles, San Francisco and Seattle. He will make his headquarters in Los Angeles. Since March, 1938, he has been district sales manager in New York, and has been in the steel business since February, 1929, when he started with the company in its Cincinnati district office.

John B. DeWolf has been appointed district sales manager in New York. Since March, 1938, he has been district sales manager in Philadelphia. DeWolf has been in the steel business since 1918, having started with Liberty Steel Company, which was subsequently merged into Republic Iron & Steel Corporation.

Herbert B. Spackman has been appointed district sales manager in Philadelphia. Since March, 1938, he has been assistant district sales manager in Philadelphia, and has been in the steel business since 1923, when he started with Bethlehem Steel Company and served in various sales capacities in Bethlehem, Buffalo and Philadelphia, before coming to Jones & Laughlin Steel Corporation.

R. B. "Luke" M'Cullar, Mid-Continent manager for Lane-Wells Company, has returned from a trip to the West Coast.

Jack Skaggs, Baroid Sales Division, has been transferred from the company's Tulsa laboratory to the Houston office.

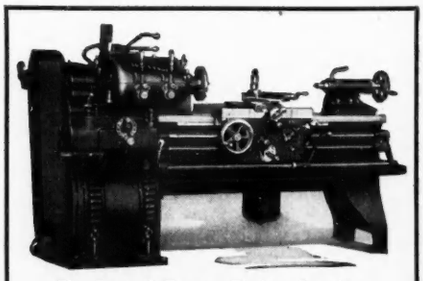
Gas-Lift

The Guiberson Corporation, Dallas, has issued a first limited edition of "The Guiberson Gas-Lift Manual"—a manual on which the company's engineering staff had been at work for some time. While the booklet, handsomely printed in several colors, describes the application of the Guiberson Flow-Valve to gas-lift, it is also in a very real sense a manual of general information on gas-lift, containing tables, data and diagrams which fully explain the theory and practice of modern, scientific gas-lift.

Supply Personals

Louis Desjardins, formerly chief geologist with Aero Exploration Company, Tulsa, is now a consulting geologist offering services on mapping and aerial photographing. Desjardins is located at 1850 S. Boulder, Aero Building, Tulsa.

B. E. Groenwold has been placed in charge of Bethlehem-International Supply Company's machinery department at Tulsa. A graduate of Massachusetts Institute of Technology, he was formerly with National Supply Company and has served in the Mid-Continent for more than eight years.



The Boye & Emmes Timken Bearing Engine Lathe

COMPLETE LINES

Machine Tools—Metal Working Machinery—Bolt and Pipe Threading Machines—Electric Arc Spot and Butt Welders—Hand Power and Electric Traveling Cranes—Foundry and Forge Shop Equipment.

D. S. MAIR
MACHINERY CORPORATION

HOUSTON
4000 Clay
Stanley Mair
Fx. 1466

DALLAS
322 Allen Bldg.
Chas. Harter
7-2874

NOTES FOR THE Equipment Buyer and User

E. M. Smith to Tour South American Fields

E. M. Smith, president and general manager of Globe Oil Tools Company, Los Nietos, California, plans to leave shortly for an extended tour of South American oil fields. His itinerary includes Trinidad, Colombia, Peru, Argentina, Brazil and Venezuela.

Smith expects to reach Buenos Aires in early April. He will remain there for 10 days or 2 weeks. The trip will consume several months time, much of which will be in direct contact with drillers and field men for the purpose of acquainting them with various new tools, as well as recent improvements in various other items in the line of drilling and reaming tools of the company.

E. M. SMITH
President, Globe Oil Tools Company

Paul B. Cochran Sales Head Buckeye Traction Ditcher Co.

Paul B. Cochran has been placed in charge of sales for the Buckeye Traction Ditcher Company, Findlay, Ohio. He was sales manager in recent years of the R. B. Equipment Division of the company in Chicago. In his new position he is in charge of sales of all Buckeye equipment, with headquarters at Findlay.

Haseltine Dead

R. S. Haseltine, who until 10 years ago was vice president and general manager of The Guiberson Corporation, Dallas, Texas, and who was further prominently identified with commercial and industrial affairs in Dallas, died February 14 in Los Angeles. He had been in ill health for a number of years. Survivors include his sons, N. G. Haseltine, with Sun Oil Company, and R. S. Haseltine, Jr., with Baker Oil Tools, Inc.

Moiles Dead

Earle D. Moiles, in charge of Pittsburgh manufacturing operations for Merco Nordstrom Valve Company, died February 5 of pneumonia complicated by a heart ailment.

He was engaged by the Merrill Company, San Francisco engineering firm, at the time the company undertook manufacture of the Nordstrom valve, and assigned to Merco Nordstrom Valve Company in an engineering capacity. As the company's operations expanded, he was placed in charge of the company's eastern factory, first at Belleville, New Jersey, then at Philadelphia, and later at Pittsburgh.

E. D. MOILES

Schedule Welding Clinic in Houston, March 22-23

Welding engineers of The International Nickel Company, The Aluminum Company of America, The American Brass Company and Handy & Harmon, Inc., will hold a welding clinic in Houston March 22 and 23.

Latest developments in welding technique as applied to nickel and nickel alloys, brass, copper, and aluminum and aluminum alloys will be demonstrated. All welding methods, including gas and electric, will be included. Particular reference will be made to welding problems as they affect the petroleum and other leading industries of Texas.

S. D. Hodgdon, Metal Goods Corporation, announced the clinic to be held at 16 Drennan Street.

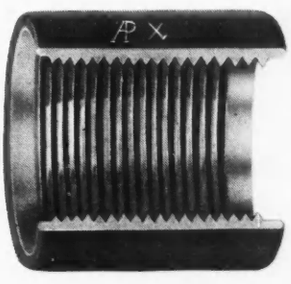
CORE AND SHOT HOLE DRILLING CONTRACTORS

"For Better Cores" . . . see Failing . . . Experienced operators and improved equipment save you money on all types of exploration drilling . . . oil, sulphur, and other minerals.

FAILING EXPLORATION & DRILLING CORPORATION
3611 CALHOUN ROAD
HOUSTON, TEXAS

ENARDO
Vapor Control Equipment!
Raises Gravity!
Reduces Corrosion!
Economical!
Positive and Safe!
Convenient Inspection!
Automatic Operation!
Descriptive Literature Sent Upon Request.
Enardo Foundry & Mfg. Co.
2729 Sand Springs Road Tulsa, Oklahoma

Call F-4171
FOR YOUR EVERY NEED
Gulf ENVELOPES
As envelope suppliers to leading concerns in the Southwest, we solicit your business on the basis of proved dependability, quality workmanship and ability to effect worthwhile economies. May we quote on your next order?
Gulf Envelope Co.
617 BROOKS ST. • HOUSTON, TEXAS



RECESSED LINE PIPE COUPLINGS
Our special patented process of recessing "XL" Couplings assures perfect alignment, tighter joints and protection of vanishing — giving longer life to the line. Made in strict accordance with A.P.I. standards in all sizes. Microscopically tested by a J.-&-L. Comparator to insure maximum accuracy.
WAREHOUSED BY:
Henry H. Paris, 1121 Rothwell St., Houston
James Riorden Co., Los Angeles, San Francisco
Send for Your Big FREE *Catalog Today!*
WHEELING MACHINE PRODUCTS CO.
WHEELING WEST VIRGINIA

Squeaks from the Bull Wheel

Rebuffed

"I told her that each hour I spent with her was like a pearl to me."

"And did that impress her?"

"No, she told me to quit stringing her."

Speedy, Too

"This jar contains a deadly gas. What steps would you take if the gas should escape?"

"Long ones."

Explained

Customs Officer (finding a bottle of whisky): "I thought you said you had nothing but old clothes in this trunk?"

Tourist: "And I was right. That's my nightcap."

Know the Type?

"And oh, by the way," she continued, "what is a hardy rose?"

"A hardy rose, madam," replied the salesman slowly, "is one that will allow you to dig it up every morning and night to see if it is taking root."

A Sure Sign

"Dear, I saw the sweetest little hat downtown today."

"Put it on; let's see how you look in it."

"Best Policy"

"You just can't trust anybody, nowadays. Why, my own grocer gave me a phony quarter in change this morning."

"Let me see it."

"Oh, I haven't got it any more. I gave it to the milkman."

Unassailable Logic

Communist spellbinder orating: "Yes, and there'll come a day when we'll all ride around with chauffeurs."

To which a timid colored man in the second row queried: "And will chauffeurs have chauffeurs too, Boss?"

Dress Rehearsal

"Halt; who goes there?"

"Regimental commander."

"Alight, Colonel, and advance to be recognized."

The Colonel, wearied after a long ride, alighted and found his way over to the rookie, who then presented arms in the snappiest military style.

"You may proceed, sir."

Laboriously the Colonel climbed back into his car. Then a thought occurred to him.

"Who posted you in such a place as this?"

"Oh, nobody, sir. I'm just practicing."

As Expected

Count: "Did your mother take the news of our engagement the way you had hoped?"

Movie Actress: "Oh, yes, right to my publicity man."

A Distinction

"Father," said the minister's son, "my teacher says that 'collect' and 'congregate' mean the same thing. Do they?"

"Perhaps, my son; perhaps they do," said the clergyman. "But there is a vast difference between a 'congregation' and a 'collection'."

More Disappointment

Robber: "Don't be scairt, lady, all I want is your money."

Old Maid: "Oh, go away! You're just like all other men."

( )

"Did you say your girl's legs were without equal?"

"No; I said they know no parallel."

Trustful

Two expert pickpockets were strolling along the road together.

Every now and then one of them would stop, take out his watch and look at it.

His companion began to get annoyed.

"I say, Jim," he said, "what's up with you? Why d'yer keep looking at your ticker? Ain't it going, or something?"

"I'm not looking at it to see the time," said the other, "I'm looking at it to make sure that it's still there!"

How It Started

"What started the trouble between you and the paintiff?" asked the English judge.

Defendant: "Well, yer honor, it was like this. 'E threw 'is beer over me. I 'its 'im across the face wiv my bag of tools. Then 'e cuts my 'ead open wiv a bottle—an' the next thing we knows we find ourselves quarrlin'!"

Explorer

"My wife explored my pockets last night."

"What did she get?"

"About the same as any other explorer—enough material for a lecture."

Willie Knew

"Willie, if your father had a full barrel of rye whiskey and a half-barrel of bourbon whiskey how much whiskey would we have for sale?"

Willie did some rapid calculating, and replied positively, "One hundred gallons."

"Why, Willie," exclaimed the teacher, "that isn't right!"

"I know," shrugged Willie, "but dad gets away with it."

Not Impressed

"What did the boss say when you asked him for a raise in wages?"

"He took it like a lamb."

"What did he say."

"Bah!"

Just An Incumbrance

"You reminds me of one of dese heah flyin' machines."

"'Cause I'se a high flier, honey?"

"No; 'cause you ain't no good on earth."

ALL ALONG THE LINE

. . . smart oil men are demanding

DEVLIN HEAVY OIL MALLEABLES ELBOWS AND TEES

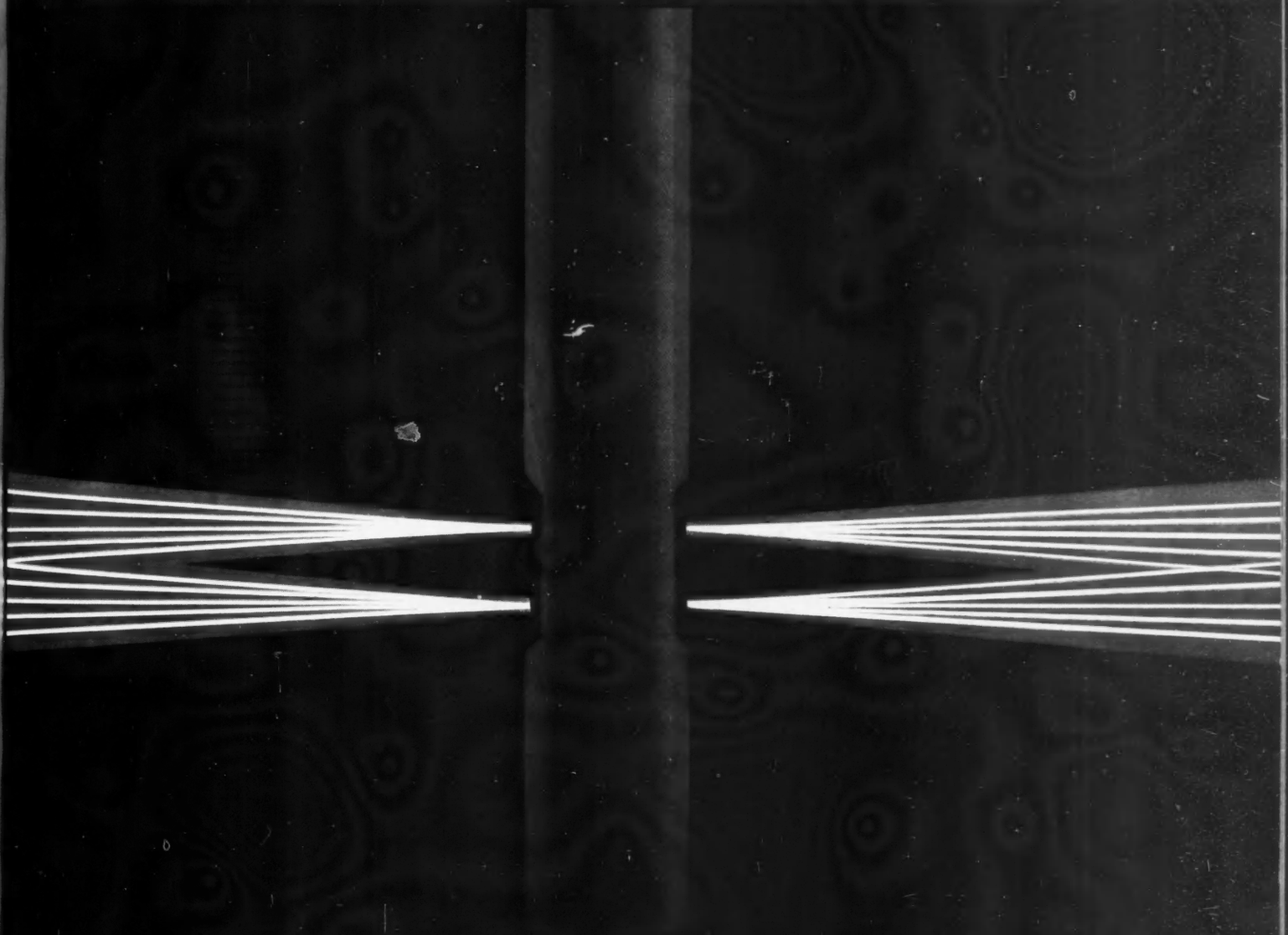
For 300 pounds Working Steam Pressure and for cold, Non-Shock Working Oil, Water or Gas Pressures as follows: 1" and smaller . . . 2000 lbs.; 1¼" to 2" . . . 1500 lbs.; 2½" to 4" . . . 1000 lbs.; 6" . . . 800 lbs. Full range of sizes available in Black or Galvanized finish.

Complete stock (including Standard, Malleable and Cast Iron Fittings and Nipples) always carried by J. E. Bobo, 2120 Rothwell St., Houston, Texas, and at the factory. Write for Catalog 15-A.

DEVLIN BLUE RING THREE PART MALLEABLE IRON FLANGE UNIONS

Ground Joint—Brass to Iron Seat—300 lbs. Working Steam Pressure; 600 lbs. Cold Oil, Water or Gas Working Pressure. Sizes 2", 2½", 3", 4". Black or Galvanized.

THOMAS DEVLIN MANUFACTURING CO.
BURLINGTON NEW JERSEY



HOWCO MECHANICAL ACIDIZING DEVICES

In addition to various acids compounded for special problems, Howco Acidizing Service also includes an exclusive line of acidizing accessories which do not get prominence through the medium of advertising, but which solve many problems in the field from day to day. Their importance should not be overlooked.

● Included among these acidizing accessories are Packers, Bridge Plugs, Acid-Cementing Devices, Hydraulic Jet Guns, Recycling Devices, etc., etc.

● Considerable time and money have been spent in the development of Howco accessories and we urge you to contact our nearest Acidizing Representative who will gladly discuss their application to your specific problems.

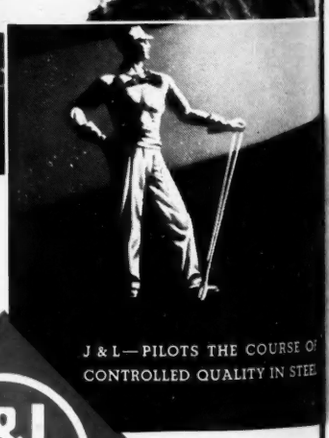
HALLIBURTON OIL WELL CEMENTING COMPANY

TUBING SETS FASTER — MORE ECONOMICALLY USING J&L 100% INSPECTED SEAMLESS TUBING

Your roustabouts, too, express their satisfaction about the way J & L 100% Inspected Seamless Tubing makes-up in the hole and speeds their job. They work faster and set a better string at a lower cost to you because J & L Tubing stabs easily — spins in quickly and tongs tight without a leaker.

You can depend on J & L Tubing to give you this kind of performance because it is *built* to do the job right. It is all made of J & L Controlled Quality Steel and threads are precision cut on high accuracy threading machines. To be sure every tube is a real producer for you, we *make sure* it not only conforms to A.P.I. Specifications but also passes (100% of production) the rigid J & L inspection of every thread element.

Your supply store stocks complete sizes in J & L plain wall and A.P.I. Standard external upset tubing. Ask him for J & L 100% Inspected Seamless Tubing for your next string.



J&L PIPE

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

PITTSBURGH, PENNSYLVANIA

J & L — PARTNER IN PROGRESS TO AMERICAN INDUSTRY

BAKER CEMENT RETAINER

A Case Study of an Actual Re-Cementing Problem Solved by Using the Baker Cement Retainer.

CASE STUDY NO. 403

PROBLEM: *To Rectify Imperfect Cement Job (Channeling Suspected)*

METHOD: *Set Baker Cement Retainer Above Perforations and Apply Squeeze (A Cement Plug was Already in the Liner Below the Perforations)*

RESULT: *After Cleaning Out, Zone was Reperforated and CLEAN OIL Produced*

• DETAILS •

Field: Montebello, Calif

Depth of Well: 7680'

Depth Retainer Set: 7132'

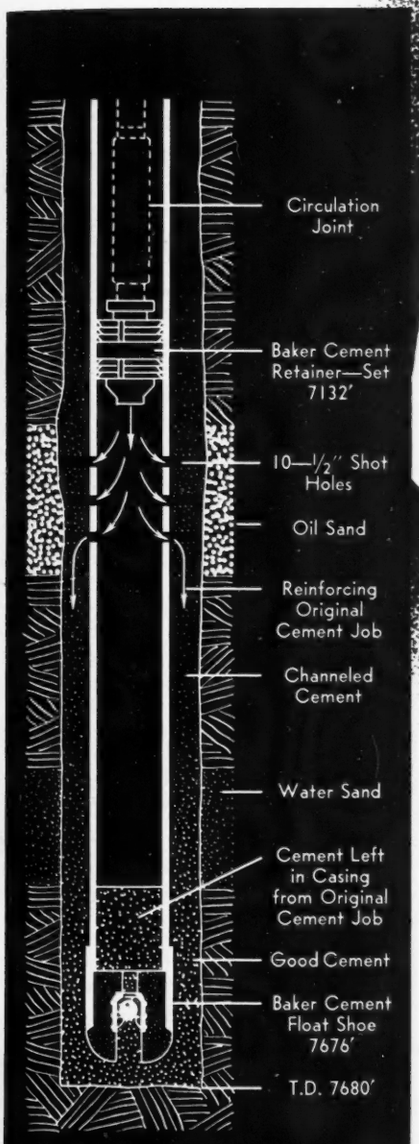
Breakdown Pressure: 1800 #

Final Pressure: 3000 #

Number of Sax Mixed: 50

Number of Sax Put Away: 50

How Cement Discharged: Through Ten, ½" Shot Holes



Squeeze cementing with Baker Cement Retainer to rectify imperfect cement job . . . channeling suspected.

BAKER CEMENT RETAINER — SAVE A WELL

"For Friendly Service, and Dependable Products, Specify BAKER."

IF YOU ARE CONFRONTED with water problems . . . problems which may be solved through the use and proper placement of cement . . . it will pay you to investigate the Baker Cement Retainer. This device is daily solving many of the usual and unusual cementing, well repair, and well completion problems confronting the industry today and it may be the solution to your difficulties.

Complete information concerning the design, construction and operation of the Baker Cement Retainer and its many practical field applications will be found on pages 239-249 of the Baker Section of the Composite Catalog; also in Baker Broadcast No. 17-A, a comprehensive, 40-page treatise which will be sent to any oil man upon request.

BAKER OIL TOOLS, INC.

P. O. Box 127, Vernon Station, LOS ANGELES, CALIFORNIA

P. O. Box 3048, Houston, Texas • 19 Rector St., New York City

IMPORTANT BAKER CEMENT RETAINER APPLICATIONS INCLUDE:

Re-Cementing • Cementing Behind Sections of Pipe • Reducing Gas/Oil Ratios • Series Cementing Plugging off Bottom Fluids • Plugging Back to Upper Zones • Testing Upper Cased Formations Squeeze Jobs • As a Heaving Plug • As a Bridge Plug at any Place in Casing or Liner

BAKER CEMENT RETAINER

Pride of the Southwest..

Sunbeam

Super STREAMLINER

Between HOUSTON-DALLAS

265 Miles – 265 Minutes

ROUND-TRIPS IN CHAIR CARS NOW MAY BE MADE AT LESS COST BETWEEN ALL S.P. POINTS IN TEXAS AND LOUISIANA

This orange, black and crimson streamliner sails with effortless, remarkable smoothness over the giant rails between Houston and Dallas. Windows are enormous, soft chairs comfortably large, dining service pleases and costs little, radio entertains. The dressing rooms are very roomy. Enjoy the Sunbeam, the super streamliner and pride of the Southwest, on your next trip between Houston and Dallas!

Northbound—Leave Houston 4:45 p.m. Connections at Dallas for Colorado, Oklahoma, Kansas City, St. Louis, Chicago, New York, East.

Southbound—Leave Dallas 5:00 p.m. Connections at Houston for Corpus Christi, Rio Grande Valley, Beaumont, Lake Charles, New Orleans, East, San Antonio, El Paso, California.

TWO OTHER FAST AIR-CONDITIONED TRAINS BETWEEN HOUSTON—DALLAS

Streamliner Hustler ..... **8:00 A.M.**
Overnight Owl ..... **11:30 P.M.**

Southern Pacific

J. T. Monroe, Passenger Traffic Manager

Southern Pacific Bldg. **Houston, Texas**

SHIP VIA SP—FREE PICK-UP AND DELIVERY SERVICE

LOOKING AHEAD

WITH THE EDITOR

Complete Simplified Record of Down-Time Causes.

DOWN-TIME on a pumping property is costly and a record of shutdown causes often cumbersome. A record, however, is necessary if an operator is to have an adequate picture of well trouble experienced and its relation to equipment and well performance.

A code classifying common causes of well trouble has been devised that supplies a record adequate for most operators at no additional labor cost or without a complicated cost-accounting system. Necessary information is obtained directly from the pumper in a brief supplementary report accompanying his daily gauge report.

The system calls for a division of down-time causes in surface and subsurface equipment. Code symbols apply, for example, to 65 parts that might be expected, at one time or another, to give trouble on an engine. Letters indicating various treatment possible, combined with the symbol for the part causing the trouble, and the date, supply a compact report yet make possible a complete record of down-time causes.

A record kept in this manner permits a quick check of past performance, indicates possible sources of future trouble and supplies information for changes for better operation. The system aids in estimating budget requirements for equipment maintenance and in valuating equipment.

A thorough description of this system, including suggested codes applying to both surface and subsurface equipment, will be given in a forth-coming pumping series article in THE OIL WEEKLY.

The OIL WEEKLY. Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

WHY MISSION VALVES LAST 100% LONGER

Oil men in every oil field are finding that the Mission principle of "Pull the Bushing and Save the Seat," is extending the life of Mission Valves and Seats by at least 100%. In many instances they have lasted 200% to 500% longer, due simply to the operator replacing the wear-taking bushing at the proper times.

A MONEY-SAVING PRACTICE THAT HAS MADE

MISSION VALVES

LEADERS IN EVERY OIL COUNTRY

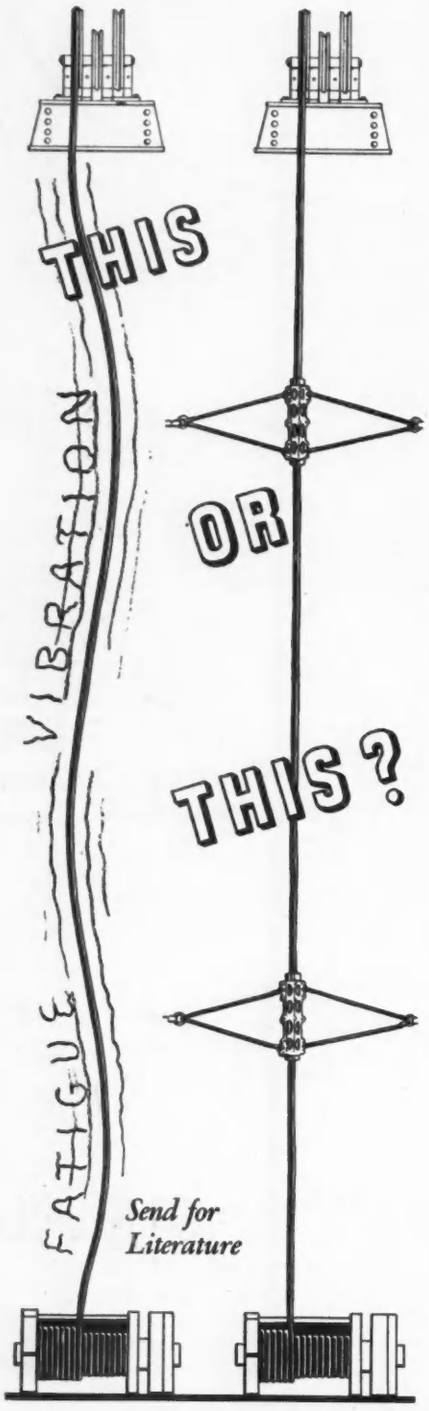
Sold Through Supply Stores Everywhere

MISSION POLICY
"IF A PRODUCT DESIGNED BY MISSION IS NOT PROVEN *Superior* MISSION WILL NOT PRODUCE IT"

MISSION
MANUFACTURING CO.
HUMBLE ROAD, HOUSTON, TEXAS
EXPORT OFFICE: 30 ROCKEFELLER PLAZA, NEW YORK

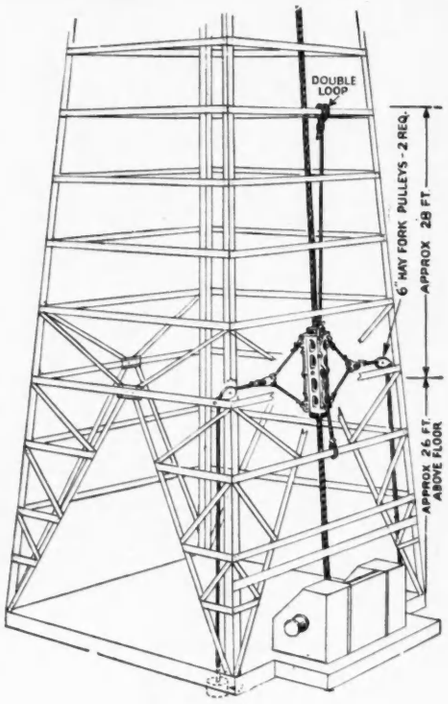
• SLIPS • VALVES • PISTONS • PISTON RODS • SWABS

IRON OUT
wire line traveling wave



Faster drilling speeds and higher derricks result more than ever in "wire line jitters." Solve this problem once and for all; add 10% to 50% to the life of the line with Patterson-Ballagh Wire Line Guides. No matter how fast the line travels, they stabilize it; prevent riding up and mis-spooling; reduce pinching and wickering. Keep the line in center with Patterson-Ballagh Wire Line Guides! By stabilizing the line, excessive fatigue is eliminated. A very serious fire hazard is removed. There are no falling particles of metal or grease. No loss of time occurs. Efficiency of the crew is increased because of the added protection.

This Guide is made in 2-section, 4-section, and 6-section types with replaceable rubber sleeves.

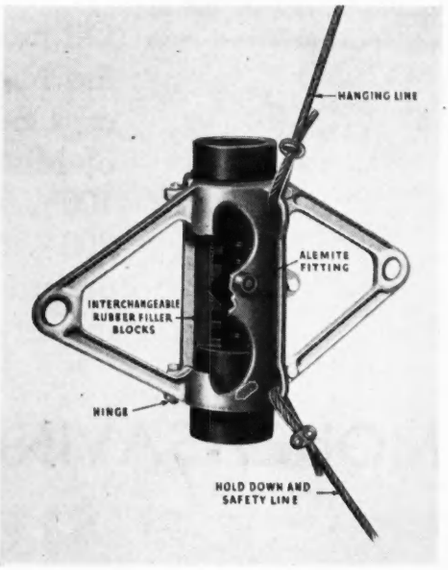


OTHER
PATTERSON-BALLAGH
PRODUCTS

DRILL PIPE AND CASING PROTECTORS
DRILL PIPE STABILIZERS
KELLY SUB PROTECTORS
MUD GUNS
PIPE WIPERS
SUCKER ROD WIPERS
TUBING PROTECTORS
WIRE LINE WIPERS

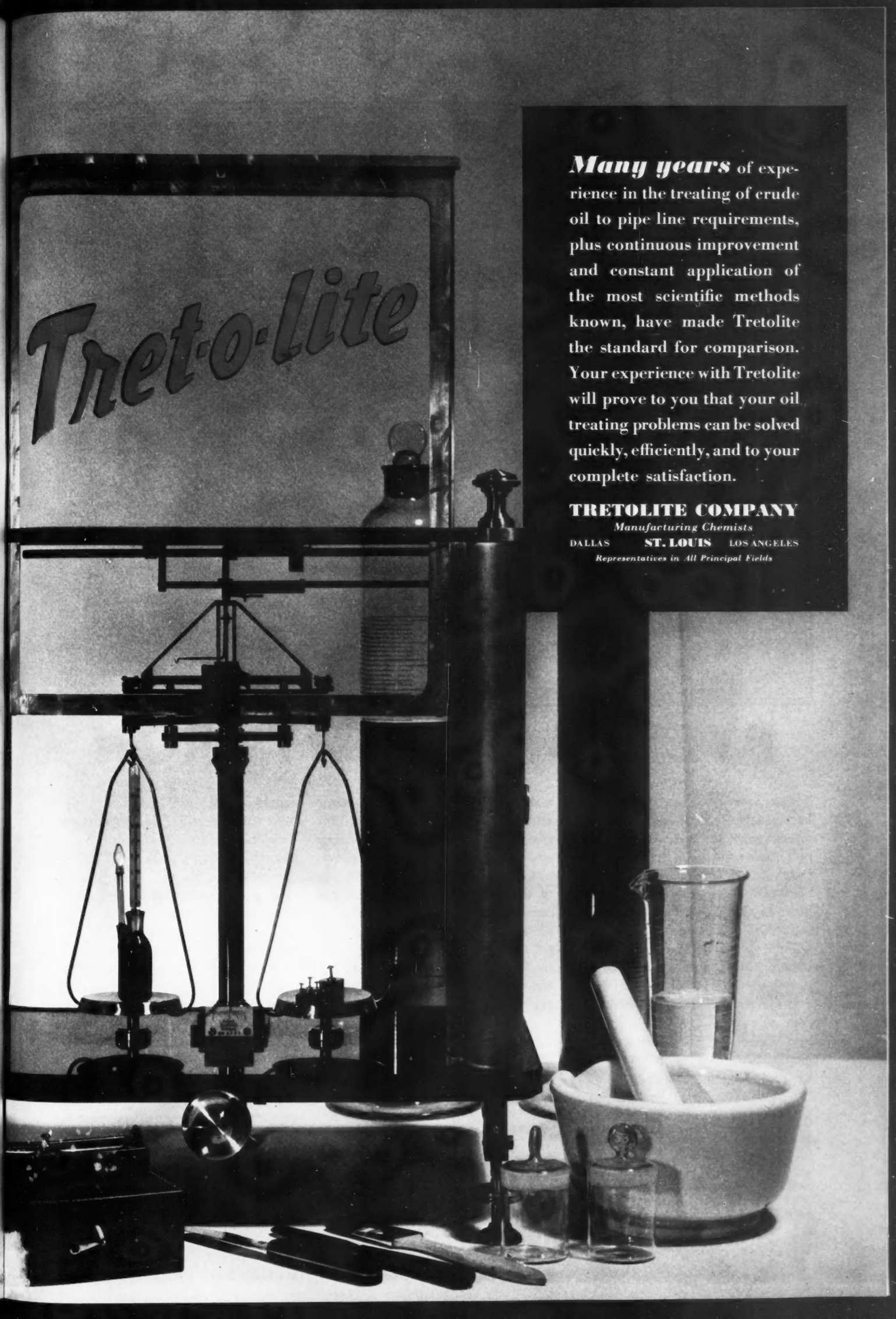
PATTERSON-BALLAGH CORPORATION

General Offices and Plant:
1900 E. 65th St., Los Angeles, California
Mid-Continent Office:
1506 Maury St., Houston, Texas
New York City Office: 39 Cortlandt St.



2-SECTION GUIDE — STANDARD STYLE

PATTERSON-BALLAGH
WIRE LINE GUIDES



Many years of experience in the treating of crude oil to pipe line requirements, plus continuous improvement and constant application of the most scientific methods known, have made Tretolite the standard for comparison. Your experience with Tretolite will prove to you that your oil treating problems can be solved quickly, efficiently, and to your complete satisfaction.

TRETOLITE COMPANY

Manufacturing Chemists

DALLAS **ST. LOUIS** LOS ANGELES

Representatives in All Principal Fields

BYERS WROUGHT IRON

For purposes of comparison, a well-known operator installed a 600-foot test string of 2" black wrought iron plain tubing at the bottom of the string in a sour Kansas well. Corrosion is at its worst in this location, as the tubing is below the fluid level.

The replaced tubing had been in service 24 months, during which period a total of 13 failures occurred . . . the first after only 8 months' service.

At latest reports, the wrought iron tubing had served over 24 months with only two failures . . . one after 13 months, and the other after 15 months. Tubing and pulling costs on the wrought iron string were less than *one-fourth* previous experience. Further savings of course resulted from the big reduction in down time and consequent lost production.

Perhaps you have a corrosion problem due to sour crude or salt water encroachment. Service records like this suggest the easy and effective solution. If you will write, outlining the particular conditions, our Engineering Service Department will check against the hundreds of case histories in our files, find out what Byers Wrought Iron has done under similar circumstances . . . and what it can probably do for you. There is no cost or obligation. Ask, also, for a complimentary copy of the Byers General Catalog, if you do not have one in your file.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Oil Country Representatives: Houston, 506 Niels Esperson Building; St. Louis, 1270 Arcade Building; Tulsa, 1112 South Troost Avenue; New Orleans, 411 Lowerline Street.

BYERS GENUINE WROUGHT IRON
TUBULAR AND FLAT ROLLED PRODUCTS
Specify Byers Genuine Wrought Iron Pipe for corrosive services and Byers Steel Pipe for your other requirements